

Chemical Week

September 3, 1955

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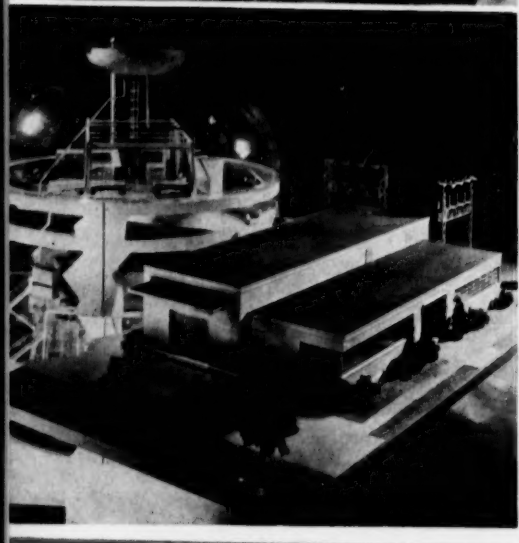
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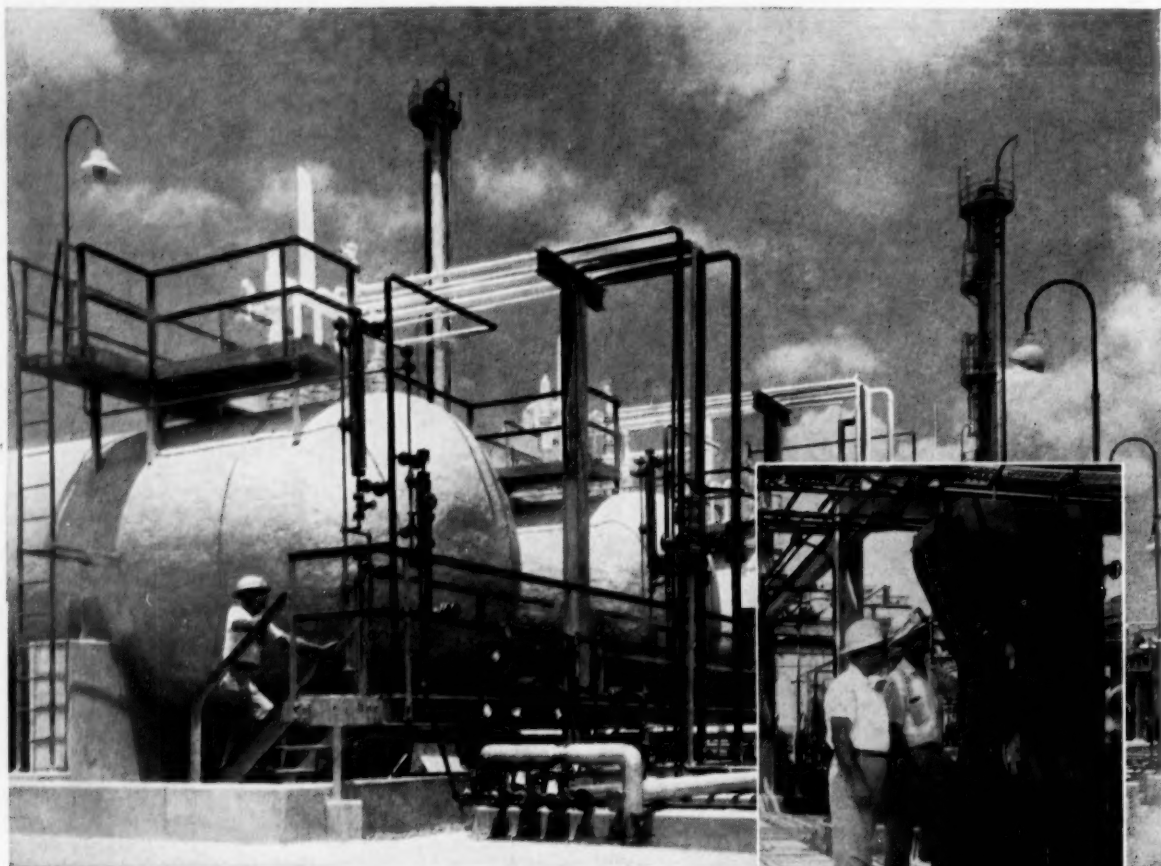
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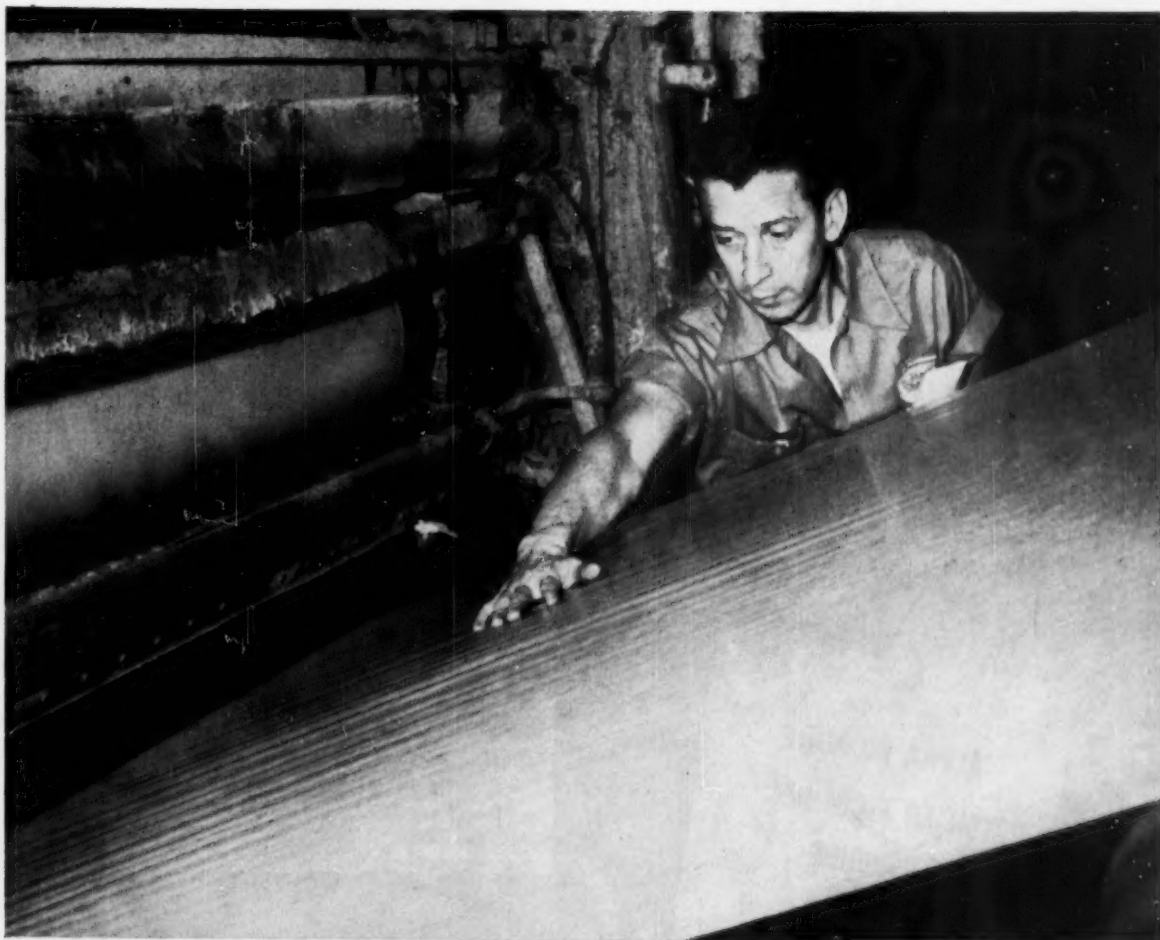
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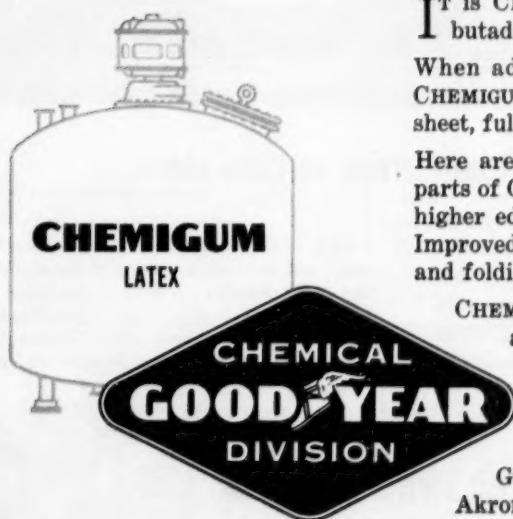
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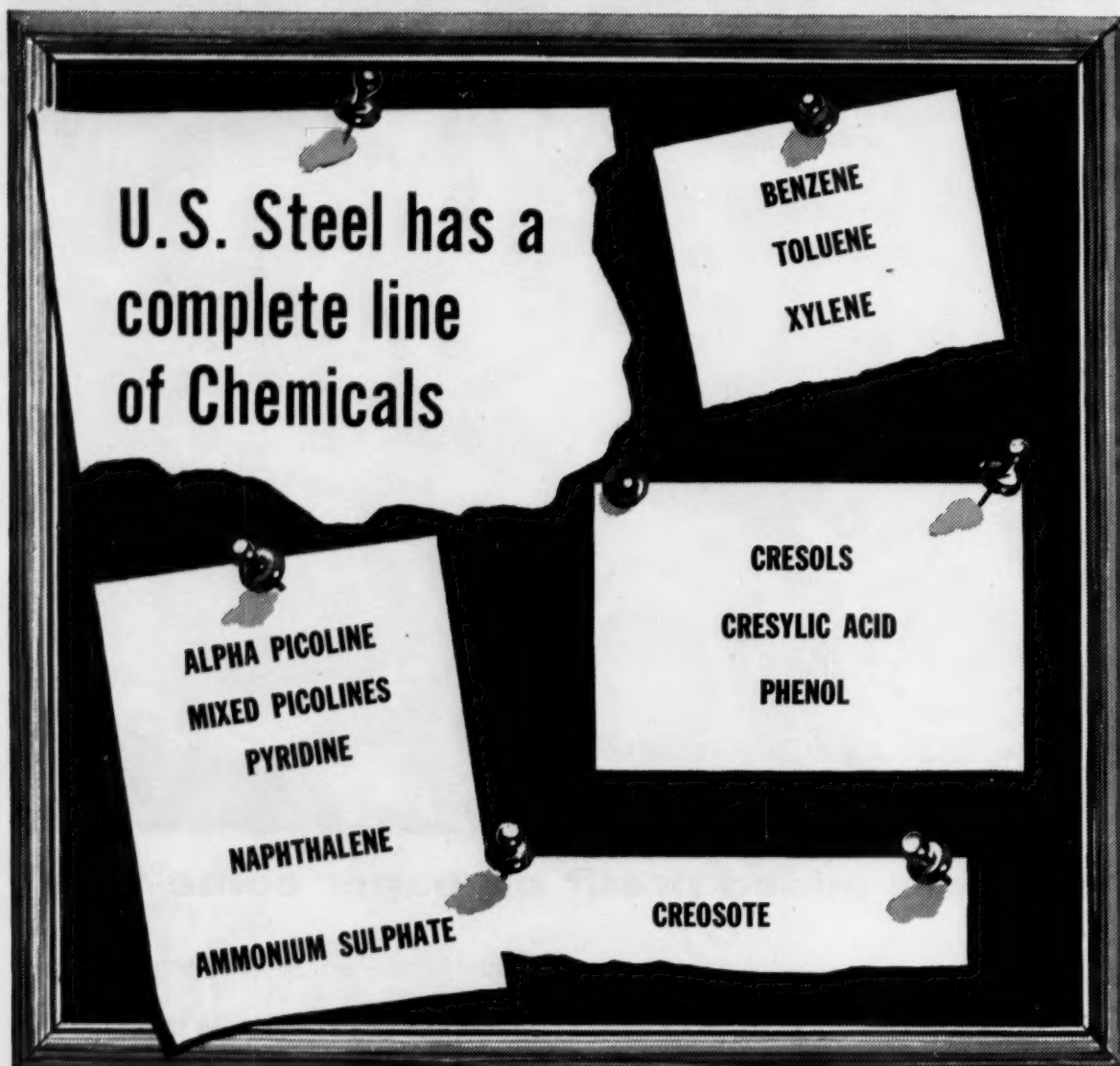
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Chemical Week

Volume 77

September 3, 1955

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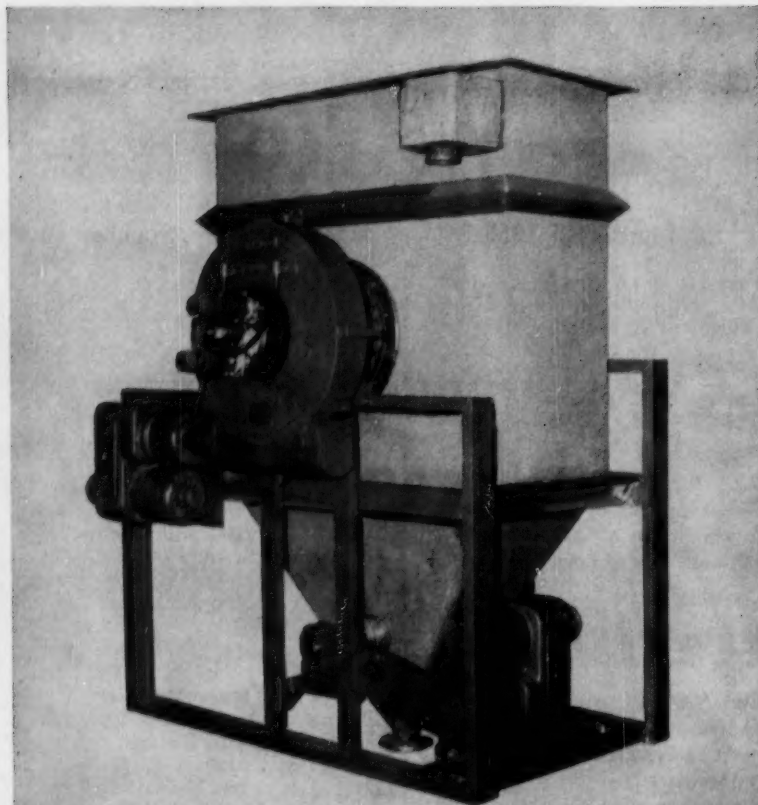
New phosphorous compounds vie for insecticide duties



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OPINION . . .

Where It Goes

TO THE EDITOR: In the last six or eight months I have seen numerous explanations of the phthalic anhydride shortage. Almost all indicate that the reason is the high level of activity in the production of new cars, trucks and buses. Some go farther and include phthalate plasticizers and alkyd paints.

An investigation of the disappearance of phthalic anhydride shows that there are two factors in the shortage that are never mentioned: (1) exports versus imports, and (2) inventory buildup. Your readers might be interested in what has taken place concerning these two items.

In 1953, a good year, there was a net *influx* of about 18 million lbs. of phthalic anhydride to this country. This year the net *efflux* is running at a rate of 20 million lbs./year. The difference represents 10-15% of the current rate of production.

We feel that the inventory buildup is due mainly to the many small purchasers of phthalic anhydride adding to their holdings as a hedge against a tight situation.

A comment about the auto industry is also pertinent. Only about a third of the paint consumed is used on new cars—the rest is for repair and repaint. Furthermore, only about half of that which is used is phthalic alkyd-based. The remainder is cellulose nitrate lacquer (these do contain phthalic anhydride, however, by way of plasticizers and alkyd resin modifications).

This letter does not help to alleviate the shortage of phthalic anhydride, but it does shed light on a confused area.

JAY R. WILLNER

Market Research Analyst

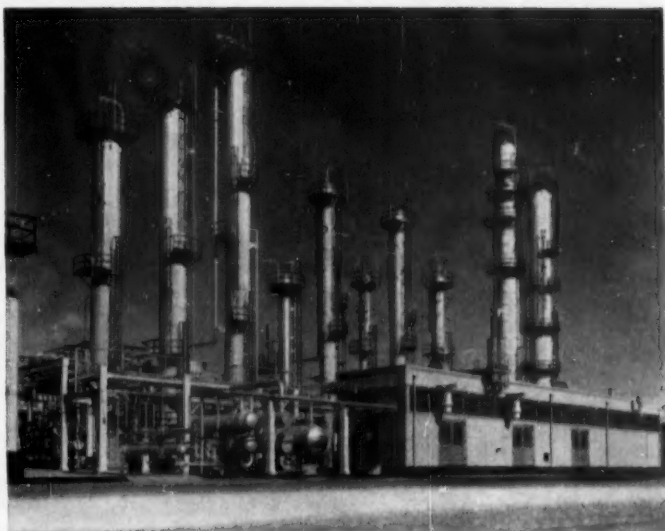
Roger Williams Technical & Economic Services, Inc.

New York

We agree. For more on phthalic see p. 71.—ED.

'Dint of Office'

TO THE EDITOR: I have read your news article on the plight of businessmen who serve in Washington without compensation . . . ("Erupting into Politics," July 30, p. 17) and have especially noted your reference to me with a little concern. Inasmuch as I had been on duty with BDSA for less than a month . . . and certainly was



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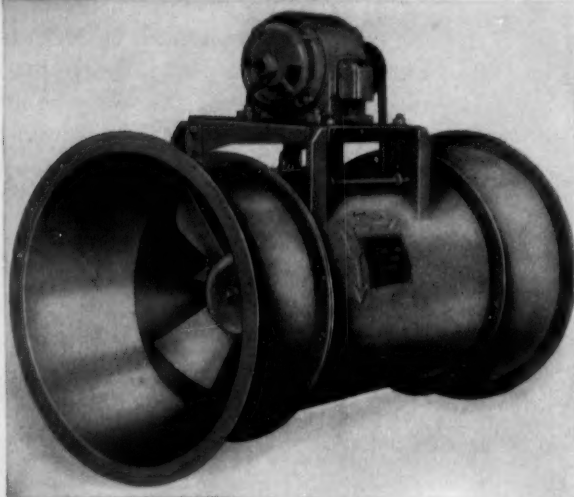
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OPINION

in no way connected with the matters now under scrutiny, it is very difficult to understand why I should be particularly singled out as being high on the list of obvious targets for such investigations.

. . . While I realize that this identification may be interpreted, if so explained, as atypical and having no personal connotations, yet I find such an interpretation is very far-fetched and wholly unlikely. In brief, this item actually proceeds to impugn me personally with all the possible irregularities, improper acts and unsavory politics that could be dredged up . . . How would you like to be sitting in my chair . . . absolutely innocent of these innuendoes . . . realizing that your readers are obliged to accept these statements as facts?

I am making a very considerable personal sacrifice to accept this tenure in Washington . . . What reason is there to attempt to crucify my professional and moral character as well as to attempt to damage my employer . . . ?

I have always assumed that your publication intends to reflect the newsworthy items of the chemical industry and to promote its interests. It is certainly hitting below the belt to point me out as the center of a controversy . . . especially in view of my extremely short tenure of office at that time . . .

The questions I have raised are serious questions to me, my employer, my associates and friends . . . This is a gross and unjustified travesty and filchment of the most sacrosanct possessions of my career . . .

THEODORE S. HODGINS
Chevy Chase, Md.

For any such inferences that Reader Hodgins, or any other readers, drew from our reporting, we apologize. CW clearly did not imply that BDSA's chemical chief had been accused of any wrong-doing or that his integrity was even questioned. What we did say is this: "Key political ringmasters regard the WOC controversy as 'good politics' for 1956 . . . several key officials are already under open attack . . . (Air Secretary Talbott, etc.) . . . moreover, a number of chemical men, by dint of their offices, are being drawn into the picture, too." We then mentioned the head of the BDSA chemicals division as one of four "obvious targets."—ED.



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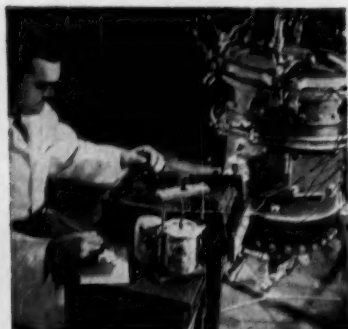
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NEWSLETTER

Government aid for plants caught in last month's record North-eastern flood is swinging into full operation this week.

Small Business Administration is granting special disaster loans for "reconstruction, rehabilitation or replacement" of facilities damaged by flood waters. Interest rates will be 3%—considerably below SBA rates for regular loans; there's no ceiling on the amount of loan any company can request.

•
Additional help is available for defense, or defense-supporting plants (e.g., one producing goods or services covered by the 200-odd expansion goals set up since Korea). Such plants can get (1) accelerated tax amortization on costs to repair damaged facilities and (2) defense loans from the Treasury Dept.

•
Moreover: ODM has authorized rental of idle government-owned machine tools and other production equipment to crippled companies making either defense or nondefense goods (monthly rental rates will be 1% of the tools' acquisition cost), is considering priority grants to damaged facilities for procurement of building materials.

•
On a less spectacular plane: the government has sold, at auction, a 70,000-ton/year calcium carbide plant at Ashtabula, O., to Union Carbide and Carbon Corp. Purchase price: \$405,000.

But before transfer can be effected, clearance on antitrust grounds must be obtained from the Justice Dept.

The plant cost \$3.5 million to build in 1941, has been held in "stand-by" operation since Dec. '52.

•
Enthusiasm is reported to be running high these days among several chemical companies interested in getting atomic reactors in operation for high-temperature-reaction products.

Reported to be talking turkey with the Atomic Energy Commission: Union Carbide (on acrylonitrile), Spencer Chemical (on ammonia), and American Cyanamid (on acrylonitrile).

The Bureau of Mines has officially requested that AEC cooperate in this type of project planning. And if AEC does, you can expect a flock of other firms with high-temperature-endothermic-reaction problems (*CW*, April 23, p. 92) to jump into the picture.

•
First new product to come under the purview of Crown Zellerbach's New Chemical Products Division (*CW*, July 23, p. 21) is an iron-chelated compound based on its Orzan, to be used as a spray against crop chlorosis.

Called Greenz 26, the compound has been field-tested on pear, peach and prune trees in California for the past two years, has been found to offer protection against iron deficiency without producing foliage burn.

Limited quantities will be on the market next year (produced at CZ's Camas, Wash., development laboratory); company officials estimate potential sales of 100 tons/year for one crop (pears) in one California county alone.

Management was claiming an early victory this week in a proxy battle for control of the Thermoid Co. (See p. 18).

An unofficial count of ballots indicates that management's slate of nominee-directors can count on 480,000 votes—more than the majority needed to win.

All the fireworks may not yet be over, however. Representatives of a stockholders' committee (claiming more than 150,000 proxies) have vowed a fight to the finish, threaten possible legal action against an alleged attempt (on the part of company officials) to juggle Thermoid's books to avoid federal taxes.

•

Topping the industry's labor relations developments over the weekend: important contract settlements in Texas and Florida:

- At Texas City, Carbide and Carbon Chemicals Co. Division of Union Carbide and the AFL's Metal Trades Council have signed a 25-month agreement that calls for a 5½% wage increase now (about 14¢ on the average), with a wage reopening set for Sept. 15 next year.

- With the signing of a pact between U. S. Phosphoric Division of Tennessee Corp. and Local 439, the AFL Chemical Workers' strike against eight Florida phosphate producers appears to be in its twilight phase. Only two of the plants (International Minerals and American Cyanamid) were still strikebound. Terms for U. S. Phosphoric were similar to those of the earlier settlements: a package increase worth an estimated 9¼¢/hour on the average, and an automatic 4¢ pay rise next July.

•

Terming any expansion in the Pacific Northwest a "calculated risk," Aluminum Company of America has decided to go ahead with plans to increase its aluminum capacity at Wenatchee, Wash., from 85,000 to about 100,000 tons/year.

Production from the expanded facilities (estimated to cost \$2 million) is scheduled to start sometime next May.

Officials describe the expansion at this time as a "risk," since all new production will depend on interruptible power from Bonneville. However, they still hope to secure a contract for firm power before new producing units come onstream.

•

Don't look for much in the way of results from Sen. Harley Kilgore's (D., W. Va.) two weeks of hearings on what problems companies have with the antitrust laws and the Robinson-Patman Act.

Mostly, the hearings have consisted of raking over old coals—with the Democrats hoping to strike up some new fire. They've covered the problems of companies caught between court decisions on basing points, exclusive dealing, quantity discount rules, etc.—but right now odds seem strong against Congress' writing any legislation next year that will ease the pinch.

•

"Straw hats" from a test tube will be in vogue for men next summer. Made from Dynel (Carbide's "miracle fiber") and deep-drawn (like metal), they'll weigh an average 3 oz. (as against 5 oz. for the more conventional "straw"), take to water like proverbial ducks.

The U. S. market for summer hats (say Lee and Disney) is now 8-9 million hats/year; initial distribution of Dynel straws will be in four colors and four styles, at \$7.50 apiece.



Triple Dead Heat—Carter Handicap—Aqueduct Race Track—June 10, 1944.

Pine Chemicals Division, Naval Stores Department
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NASS-4

EVERYONE WINS with ROSIN AMINE



Before manufacturers use a new chemical ingredient in their products, they must be convinced that they have a "sure thing". The recent experience of three large companies provides a typical example of how rosin amine derivatives have been proving themselves a winner.

The three companies—a manufacturer of industrial fungicides, a pharmaceutical firm, and a company making chemicals for the petroleum industry—did their "gambling" in the research laboratory. Once convinced that amine derivatives could improve their products they started using them in full commercial production.

Perhaps you have been missing a good bet by not exploring the way in which Rosin Amine D and its derivatives can serve as chemical building blocks in your products. For example, Rosin Amine D forms wax-like salts and resinous amides by reaction with carboxylic acids and reacts with metal salts to form resinous metal complexes.

The amino nitrogen in Rosin Amine D is responsible for surface activity, selective adsorption, and microbiological growth control which can be tailored to obtain desired physical properties. The wide range of properties of the amine derivatives—available in oil-soluble, water-soluble, and acid-soluble types—offers many challenging opportunities to create new products or improve established ones.

To get your "tip sheet" on this versatile chemical family, just write Hercules. We'll be glad to send detailed technical data.





**"we refer to the
chrome plated
fire hydrant....**

... in front of the Portland, Oregon beauty shop, whose operator felt that an ordinary plug just wasn't glittery enough." (from the *Baltimore Sun*)

"Just what is it, we would like to know, that makes shiny chrome an adjunct to civilized existence? Almost everywhere you look, everywhere you go, chrome plate gleams... from key ring to automatic toaster, from ball point pen to cocktail shaker the idea seems to be, Brother, you aren't living unless it's chrome plated."

The answer is that chromium provides much more than a distinctively pleasing appearance.

It protects metals against tarnish, corrosion and mechanical wear. It is not easily scratched. It is unaffected by heat, smoke, grease. It prolongs the useful life manyfold. Original lustre is restored by wiping. There are also engineering reasons such as low coefficient of friction.

Whatever your requirements are for Chromium Chemicals — to plate fire hydrants or to plate diesel engine cylinder liners — you will find Mutual a reliable source of supply.

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BUSINESS & INDUSTRY

HIGHLIGHTS OF GOVERNMENT FINDINGS ON CUTTER LABORATORIES

- Some of Cutter's polio vaccine contained enough live virus to give polio to some of those injected and to their close associates.
- Cutter's processing and testing were clearly within the procedures prescribed by the U.S. Public Health Service.
- U.S. Public Health Service testing procedures were not sufficiently sensitive to detect presence of minimal infective amounts of live virus.

Now It's Revealed

The Public Health Service admitted last week how close we came to a national disaster when it released the Salk polio vaccine April 12.

The admission came between the lines of its report on Cutter Laboratories' production of the vaccine, which, though written at least six weeks ago, has been circulated and recirculated among Health Service officials who disagreed over how much information to make public.

The report admits that Cutter was only one of several makers who, though following government inactivation standards and safety tests, allowed active virus to remain in distributed vaccine.

But it was equivocal on whether Cutter Laboratories should be absolved of blame for the now-established presence of infective amounts of live virus in vaccine it distributed.

Consideration of detailed Cutter data, said the report, "warrants the presumption that a combination of inadequate inactivation (by Cutter) and failure of the safety tests (established by Public Health) permitted the presence of undetected infective amounts of live virus in some lots of the vaccine."

In a hurriedly called news conference, Surgeon General Leonard Scheele said he considered the report neither "favorable nor unfavorable to Cutter.

"No evidence was found," Scheele said, "to indicate that anything was done by Cutter to shortcut or be sloppy deliberately."

But full acknowledgment of the inadequacy of original government standards is found in the report itself. "Prior to May 27," it states, "inadequacy of inactivation was not unusual in the experience of several of the manufacturers. In addition, there were then fundamental weaknesses in the safety testing procedures."

In Berkeley, Calif., Cutter termed the report "a thorough, scientific and courageous report, affirming our faith that no negligence or incompetence could be found at Cutter Laboratories."

The vaccine which caused all the trouble, Cutter maintains, passed all tests then prescribed by the government.

Today the U.S. Public Health Service has drastically revised its tests, admitting to the nation its guilt in the near disaster.

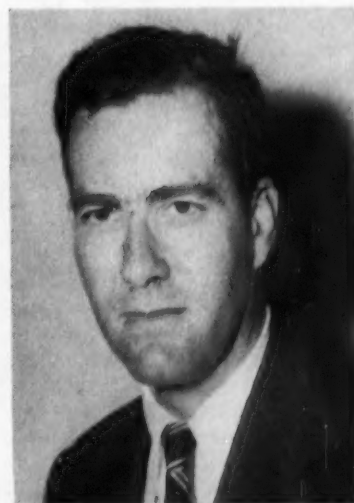
Forced Out in the Open

More information for stockholders of companies involved in proxy fights is the goal of regulations proposed last week by Securities & Exchange Commissioner, J. Sinclair Armstrong.

His proposed rules spell out five specific acts, which, if committed by either side in the course of a proxy battle would constitute a violation of the law:

- "Predictions of specific future business and financial results."
- "Irrelevant statements that confuse or mislead."
- "Material that directly or indirectly impugns character, integrity or personal reputation . . ." or charges improper, illegal or immoral conduct or associations, unless "factual data" supporting the statements are filed with the commission prior to their use.
- Unsupported or unsupportable innuendoes, accusations or questions.
- Material that's supposedly factual but can't be established by information available to SEC.

Present rules say only that proxy representations can't be false or misleading, a condition that has caused distress to many chemical executives.



ARMSTRONG: Would outlaw deceptive practices in proxy battles.



VLADIMIR MATSKEVICH: Acting Minister of Soviet Agriculture runs Russia's government-directed farm fertilizer production

BUSINESS & INDUSTRY



. . . concerns himself with livestock raising and how method

They Came, They Saw, They Doubted

One of the most revealing aspects of the 12,000-mile, five-week tour of the U.S. that Russian farm experts concluded last week was the light it throws on development and usage of agricultural chemicals in the U.S.S.R.

In the main, the Russian delegation, led by acting Agricultural Minister Vladimir Matskevich, were skeptical about the efficiency of U.S. chemical products; they doubted whether (in some cases) Russians could adopt our methods, wondered whether chemically produced fertilizers could increase crops at home.

But they listened and they talked. And in so doing, they revealed, in large measure, just how far development of agricultural chemicals has progressed behind the Iron Curtain.

Use by Iowa corn farmers of 2,4-D to eliminate at least one cultivation strained the Russians' credulity. In the U.S.S.R., they admitted, farmers have had trouble with use of such herbicides; industry has not been able to consistently produce a material that kills weeds, yet does not kill corn.

The high rate of fertilization of corn and small grain crops puzzled them, too. (Russian fertilizer output is only a small percentage of that in the U.S., and its main use is on cotton, sugar beets and vegetables—not on grain.)

Further (with a you-show-me attitude):

- They were generally dubious about use of fertilizer to keep up soil fertility. (Because rainfall seldom goes over 18 in./year in the best Russian farm area, the Ukraine, it is doubtful that their present mixed goods—compounded from normal superphosphate, ammonium nitrate and Polish potassium muriate—are used to full effect.)

- They showed great interest in cotton mechanization, and corollary use of defoliants and herbicides. (The best Soviet cotton producers get two-bales/acre yields—only 10% under U.S. They use irrigated land for some 97% of their cotton production, and thus, can profit from high fertilizer use rates. They are now experimenting with application by airplane.)

- They were impressed by America's widespread use of commercial feed supplements in the Midwest livestock area. (Russian livestock production is only 20% as efficient as in the U.S. They are just in the early clinical test stages on urea, antibiotics and vitamin B₁₂; stilbestrol and other hormones are apparently not yet in use.)

First-Hand Look: At Beltsville, Md., they were shown the sprawling experimental research center of the U.S. Dept. of Agriculture, evinced

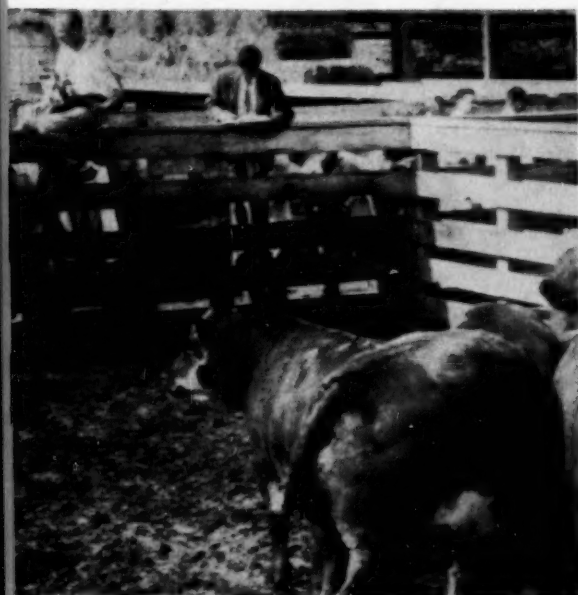
sympathy to research workers who showed them fields of disease-resistant crop varieties, knocked over by hurricanes Connie and Diane.

(Winds are quite a problem in both the long-cultivated areas such as the Ukraine, and in the newly planted lands east of the Urals. Many of Russia's shelter-belt wind-stopping practices might be adaptable in the U.S.)

Russian machinery experts were frankly skeptical about the durability



ALEKSANDR EZHEVSKI: Doubts U.S. tractors could stand up in the



COMRADES: Sirofin (above) and Sokolov (right) inspect Iowa corn crops, are interested in the Burbank system of seed selection.

in Cedar Rapids differ from those in the U.S.S.R.

of a no-valve liquid fertilizer pump shown them at Beltsville. The device, which recently went on the commercial market, dispenses such corrosive liquids as nitrogen solutions using only vinyl chloride-acetate copolymer tubing in contact with the solutions. (Russian equipment is built for durability; the seeming fragility of such pipe clashes with their ideas. Too, Russians apparently have not yet seen fit to use liquid solutions on a wide scale.)

When talking with experts at such agricultural colleges as Nebraska,

Iowa State and Michigan State, they were greatly interested in insect-control techniques. (In Russia, three types of beetles—one related to the Colorado potato bug—are significant problems.)

Leaving the Door Open: When the Russian tour was completed, group leader Matskevich sadly admitted: "We know very little about American agriculture." He emphasized, however, that this visit (and the concurrent one of American experts in Russia) should be only the first in a series of such exchanges.

Adding that he had invited more than 70 of the experts he had met to visit Russia, Matskevich indicated that future delegations should specialize more narrowly, should stay longer, and should travel less.

One immediate result of his reaction: several organizations in the fertilizer and farm chemical fields have already been approached to see whether they would extend invitations for a closer examination by Russian agricultural chemists.

Their response: "an enthusiastic welcome back—any time."



Ukraine but has praise for literature U.S. producers supply to farmers.



MATSKEVICH: Gets 4-H Club pin from Secretary Benson, lauds U.S. industry.

COMPANIES.

Acquisition of Thermacote Plastic Products Corp. (Newark, N. J.) by Holiday Plastics, Inc. (Kansas City, Mo.) was approved by Holiday stockholders last week. Under terms of the transaction, Holiday obtains a \$3-million contract with the Cinderella Glass Pool Co. (Van Nuys, Calif.), manufacturer of fiber-glass swimming pools.

Delhi-Taylor Oil Corp. claims discovery of significant potash deposits in Grand County, Utah; it has acquired 2,000 acres of land in the area.

Three core holes have already been drilled with favorable results, company representatives claim; additional tests are planned for the near future.

Relly Tar & Chemical Corp. has sold a 48-acre plant in Newark, N. J., to Pitt-Consol Chemical Co., a subsidiary of Pittsburgh Consolidated Coal Co.

Dissident stockholders of the Thermoid Co. received a setback last week when their move to have certain management proxy material ruled misleading was thrown out of Chancery Court in Wilmington, Del.

Objecting stockholders had charged that management mishandled tax funds, and through their complaints had caused the company's annual stockholder meeting to be postponed three times.

•
A late company incorporation:

Phillips Pacific Chemical Co., in Dover, Del., listing authorized capital stock of 3,000 shares, no par value.

EXPANSION

Vinyl Acetate: Carbide and Carbon Chemicals Co. will build additional vinyl acetate producing facilities at Texas City, Tex.

Construction of the additional units will be completed by fall, 1956, will more than double the company's vinyl acetate output at Texas City.

•
Polyurethane Foam: Nopco Chemical Co. (Harrison, N. J.) has started work on a polyurethane foam expansion program, will open two new plants this year and a third in 1956. One plant will be located in Los Angeles, another in New Jersey, and

a third in the "greater Chicago area."

Market for polyurethane foams (one facet of the urethane picture, see page 28) is now 400,000 lbs./year. But industry observers predict that the demand will grow to 100 million lbs./year by 1960.

•
Silicones: Production at Linde Air Products Co.'s \$14-million silicone plant (Long Reach, W. Va.) will start sometime this fall. Several buildings have already been completed; training of locally employed personnel has started.

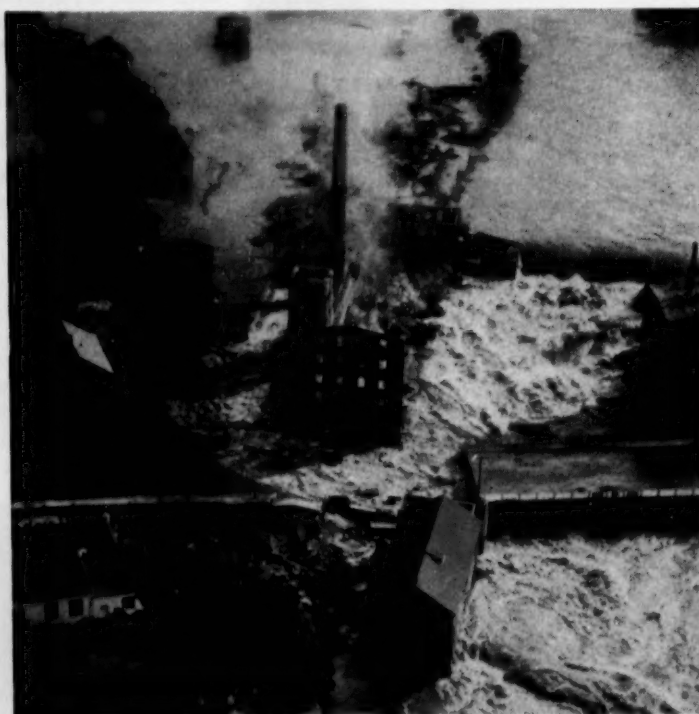
•
Oxychemicals: Hercules Powder Co. will build additional oxychemical-producing units at Gibbstown, N. J. Con-

struction starts this fall; when completed, Hercules' total output of paracresol at Gibbstown will be 3 million lbs./year.

•
Synthetic Rubber: Goodyear Tire & Rubber Co. will expand synthetic rubber-producing facilities at Houston, Tex.—ultimately giving the company a 50% increased capacity there.

First stage of the expansion will be to step up production from 135,000 to 170,000 tons; cost: \$6 million.

When this work is completed (sometime in 1957), Goodyear will undertake another increase in tonnage output—pushing total company output at Houston to over 200,000 tons/year of synthetic rubber.



WIDE WORLD

Disaster Breeds Disaster

ONE OF THE MOST spectacular (if not terrifying) aspects of last week's floods in the Northeast was this fire at Metal Sellers Corp.'s magnesium plant at Putnam, Conn. Fire broke out as flood waters hit the plant's boilers; firemen were unable to reach the blaze because

of the turbulent waters of the Quinebaug and French Rivers.

Making the situation worse: burning magnesium set fire to other buildings as it was swept downstream; damage incurred is still virtually impossible for insurance companies to estimate.

Better products
begin with



THE V-C* LINE

Phosphorus, Elemental
Phosphoric Acids
Phosphoric Anhydride
Disodium Phosphate
Trisodium Phosphate
Tetrasodium Pyrophosphate
Sodium Tripolyphosphate
Sodium Metasilicate
Ferrophosphorus
Slag
Dimethyl hydrogen phosphite
Diethyl hydrogen phosphite
Dibutyl hydrogen phosphite
Bis(2-ethylhexyl)
hydrogen phosphite
Triethyl phosphite†
Triisopropyl phosphite†
Tributyl phosphite†
Trihexyl phosphite†
Triisooctyl phosphite†
Tris(2-ethylhexyl) phosphite†
Tris(2-chloroethyl) phosphite
2-ethylhexyl
octylphenyl phosphite
Tricresyl phosphite
Diethyl ethylphosphonate
Dibutyl butylphosphonate
Bis(2-ethylhexyl)
2-ethylhexylphosphonate
0,0,0-Triethyl phosphorothioate
0,0,0-Tributyl phosphorothioate
0,0,0-Triisooctyl phosphorothioate
and other organophosphorus com-
pounds and phosphatic specialties.

†MFD. UNDER U. S. PAT. 2,678,940

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80% FOOD GRADE
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Buyers appreciate the service they get from Virginia-Carolina Chemical Corporation. Deliveries of V-C Phosphoric Acids are usually made in hours . . . not days or weeks.

V-C Plants are strategically located in the center of the industrial South and in the heart of the Ohio Valley. Excellent rail and public trucking facilities are available and V-C maintains its own fleet of trucks, including tank units, for fast deliveries. Shipments are made in tank cars, tank trucks, carboys, barrels and drums.

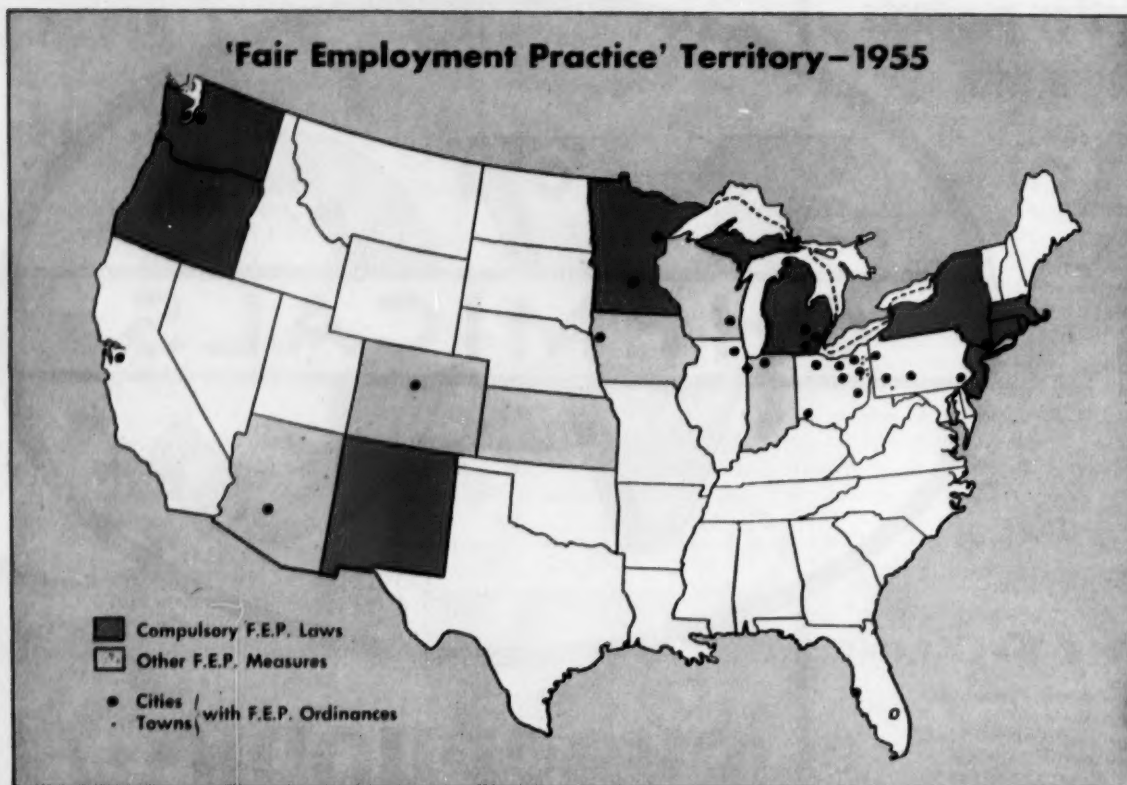
It will pay you to establish V-C as a source of supply. You get purity which exceeds specifications and you get your shipments on time from a company which appreciates your business. To meet your needs, V-C produces a wide range of types and grades of phosphoric acids and other phosphatic chemicals. *Contact V-C today!*

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172 Chemical Cases: Only the Beginning?

So far, the chemical process industries show up well in records on fair employment practices; but the trend toward wider adoption, stricter enforcement of FEPC laws prompts a look at past experience to avoid future litigation and bad publicity.

Up to now, chemical process companies have come off rather well in cases under state and local fair employment practice codes;* but it appears that this is only the beginning of a series of personnel problems that might become nationwide in scope and that may require top-management attention for decades to come.

By now, nearly every large chemical company has at least one plant, warehouse or office that comes under one or more F.E.P.C. laws; and with these laws gaining ground each year, an increasing percentage of chemical industry jobs are falling into F.E.P.C. jurisdictions.

As of this week, 10 states have enforceable laws on this topic, and the

Pennsylvania legislature has been debating two versions of an F.E.P.C. bill for that state. Compulsory F.E.P.C. laws were adopted last spring in Michigan and Minnesota, and in Johnstown, Pa.; and Connecticut and Washington laws were strengthened.

Many a Comeback: More or less "full strength" F.E.P.C. bills were defeated this year in 10 states, but these bills are hardy perennials that can be expected to turn up in future sessions. F.E.P.C. is also an almost-continuous controversy in Congress.

In general, F.E.P.C. bills get fervid support from labor unions (particularly the CIO); from the National Assn. for the Advancement of Colored People; and from "liberals" of both major political parties. They hold that only through compulsory legislation can people be sure of getting the fair and

equal treatment that's implied in the Constitution. Employer groups, on the other hand, tend to oppose compulsory F.E.P.C. laws, but sometimes sponsor voluntary educational programs to encourage hiring and promotion on a merit basis.

In Illinois, for example, the State Chamber of Commerce warns that compulsory F.E.P.C. legislation would slow down the progress now being made along this line. "Such legislation," the chamber says, "is basically unsound because it would allow politically appointed commissioners to supervise the employment policies and practices of thousands of firms."

Chemical Firms Cleared: Out of more than 8,000 F.E.P.C. complaints now on record (see table, p. 21), only 172 involved chemical firms; and of these, only 50 were found to have probable validity. This experience with F.E.P.C. laws provides pointers on how to avoid future entanglements, costly litigation and bad publicity.

One principal source of complaints in the past has been hiring policies. A

* F.E.P.C. laws differ in details, but their essence is a clause against job discrimination because of race, color, religion, or national origin.



NEW YORK'S ARBURY: His commission first in field, first in cases.

few chemical companies were found to have violated the law by publishing "help wanted" advertisements that seemed to rule out certain applicants. Others drew complaints because of questions to job applicants about race and religion.

Company-wide Policy Asked: Several officials charged with enforcing F.E.P.C. laws told *CW* that some

chemical firms have failed to apply approved hiring policies to their office, sales, and other white-collar jobs.

Sometimes complaints arise from layoff and recall orders. One employer is being accused of having laid off Negro workers without regard to seniority, and then calling back white workers before the Negroes.

Another sore spot: promotions. In Massachusetts, a large chemical plant was found to have "drawn the color line" against two hourly paid workers considered eligible for promotion.

It seems that professional people are reluctant to resort to F.E.P.C. laws. A chemist in Pennsylvania told the F.E.P.C. commission that he had been turned down for employment because of his religion, but he refused to file a formal complaint because he didn't want to be branded as a "trouble-maker." He wound up taking a job with a metals concern.

Over-all, F.E.P.C. commissioners interviewed by *CW* agree that the chemical industries—particularly pharmaceutical companies—rank near the top in fair employment practices. But all industries, they say, still have to face the challenge of putting all jobs, high and low, on a straight merit basis.

SO FAR, SLIGHT FRICTION

(Cases handled under fair employment laws and ordinances)

CHEMICAL PROCESS INDUSTRY CASES

State or City	Year Law Enacted	All Industry Complaints	Com- plaints	Probable Cause Found	Satisfac- torily Adjusted
Cleveland	1950	325	0	....	....
Colorado	1951	41	0	....	....
Connecticut	1947	500 ⁽¹⁾	9	6	6
E. Chicago, Ind.	1951	28	0	....	....
Massachusetts	1946	864	15 ⁽²⁾	8	8
Michigan	1955	0	0	....	....
Minneapolis	1947	226	5	5	4
Minnesota	1955	0	0	....	....
New Jersey	1946	873 ⁽³⁾	40	13	13
New York	1945	2,877	57	11	11
Oregon	1949	143	2	0	....
Philadelphia	1948	1,342	42	6	6
Pittsburgh	1952	180 ⁽⁴⁾	0	....	....
Rhode Island	1949	240	0	....	....
Washington	1949	260	2	1	1
Wisconsin	1950	131 ⁽⁵⁾	N.A.	N.A.	N.A.

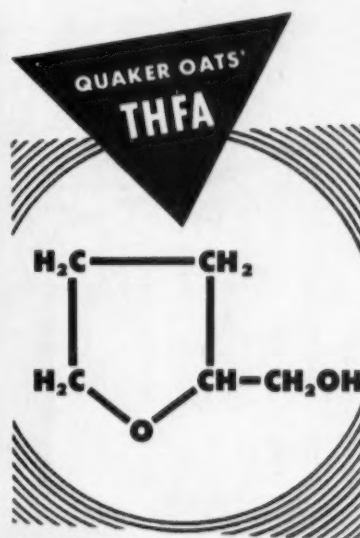
(1) Report covers first 500 cases only.

(2) Three cases still pending.

(3) Report covers first eight years only.

(4) Approximate.

(5) Report covers first four years only, and separate industry data not available.



Tetrahydrofurfuryl alcohol (THFA*) undergoes the reactions of a primary alcohol while the ring exhibits characteristics of a saturated cyclic ether.

THFA is the starting point for the preparation of high boiling tetrahydrofurfuryl esters and ethers. As a ring compound it may be opened to give straight chain compounds, or expanded to a six-membered ring as dihydropyran.

Solvent uses of THFA have attracted attention. As a solvent its high boiling point coupled with complete miscibility with water makes it unique. Its solvency for resins, gums, dyes and complex organic compounds is excellent. When using THFA as a solvent, saving of time in dissolving material and ready recovery of the THFA may more than offset its higher initial cost compared to cost of other solvents.

*Reg. U. S. Pat. Off.

THFA

Is commercially available in drum and tank cars.

Properties of THFA (Pure Compound)

Boiling Point °C, (747 mm)	177.8
Specific Gravity, 20/20 °C	1.054
Refractive Index, n _D 20/D	1.452
Water Solubility	Complete

Send for a sample of tetrahydrofurfuryl alcohol and our Bulletin 87.

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INCREASED DEMAND has brought about full production (e.g., this ammonium nitrate plant at Linz), and put . . .

New Confidence in Austria

Weighed down by heavy taxes and onerous government regulations, Austrian chemical companies should be tottering on the brink of extinction. Moreover, equipment in many plants is obsolete or in bad condition; some 300 plants (of all types) have been operated by the Russians since the termination of World War II, and are in dubious working order.

Making the outlook even more dismal: the Austrian government (burdened by a half-billion-dollar war debt) will probably be forced to impose even stiffer taxes next month when occupying troops move out; chemical firms will shoulder a heavy portion of the additional tax load.

The industry, as a whole, however, is far from discouraged. Exports are picking up steadily (*see table, p. 24*); most firms have new construction (or expansion) plans under way.

Last year gross production record for chemicals and allied products stood at \$188 million; output was 100,000 metric tons. And this year a 20% gain should be registered in both categories. By product groups, here's how Austria's chemical industry stands today.

Sulfuric acid: Sulfuric acid plants throughout the country are operating at full capacity. One plant (finished two years ago with Marshall Plan aid) is this month, for the first time, tuned up to peak production; another will be onstream this fall.

Trichlorethylene production experienced a 100% capacity boost in 1954; expansion of carbon tetrachloride facilities will make it possible in 1955 for Austria to meet its requirements without resorting to imports.

Production of copper sulfate catapulted 250% last year—that of nickel sulfate, 150%. But since domestic requirements also rose rapidly, export orders were left unfilled—a condition that producers hope to rectify when other plants (now under construction) come in later this year.

Synthetic fibers: A 30% production increase was turned up in synthetic fibers last year—which brought about a similar 30% increase in carbon disulfide production.

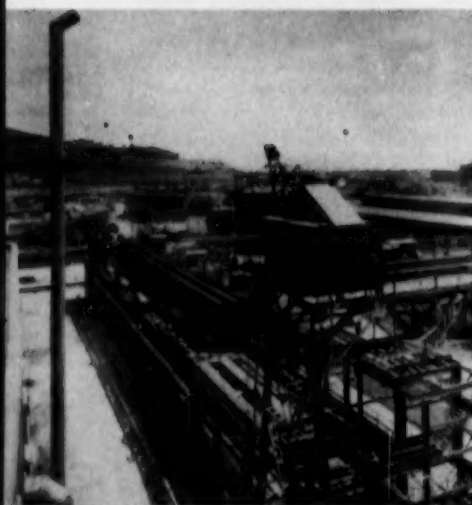
Ferro alloys have increased 10-fold in total output in the past 12 months, and today stand as one of the country's leading (and most sought-after) export items.

In the fertilizer section of the chemical industry, increased domestic demand and chance of foreign sales have brought about major production increases. Foreign buyers purchased 445,000 metric tons of fertilizers in Austria during 1954*; Austrian nationals consumed 146,000 metric tons.

Adding to the prospects in the months ahead: a new superphosphate plant (outside Vienna), finished in October of last year, but only now going into full operation.

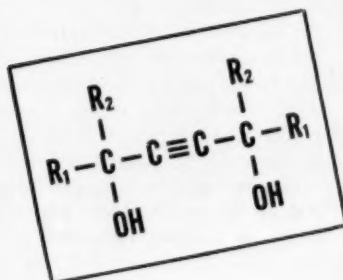


OUTPUT of nitrogenous fertilizers topped 500,000 metric tons last year.



AMMONIA production contributed heavily to \$46 million in exports.

A NEW APPROACH TO NON-FOAMING SURFACE ACTIVE SYSTEMS



SURFYNOLS

Highly surface active when used alone in aqueous systems, the SURFYNOLS in conjunction with most other surface active agents give improved performance. In many cases, these combination systems are low foaming or non-foaming. These low foam synergistic combinations include anionic, cationic, and non-ionic surface active agents with the SURFYNOLS.

PROPERTIES

	M.P.T.	SOLUBILITY, WATER, 25°C	SURFACE TENSION	DRAVES TIME	FOAM, ROSS MILES
SURFYNOL 82	49°C	10.5	38.5 dynes/cm. (2%)	24 sec. (2%)	.5 cms.
SURFYNOL 102	61°C	1.3	34.0 dynes/cm. (.4%)	8 sec. (.4%)	0 cms.
SURFYNOL 104	37°C	0.12	33.8 dynes/cm. (.07%)	8 sec. (.1%)	0 cms.

TYPICAL APPLICATIONS

Pigment dispersion in emulsion paints and other aqueous systems.

Low foam detergent systems.

Anti-foaming agent.

Viscosity reduction of polyvinyl chloride plastisols and aqueous gum systems.

TWO AND TWO MAKE MORE THAN FOUR

The surface activity of SURFYNOLS combined with that of many other surface active agents is MORE than the sum of the two effects taken independently.



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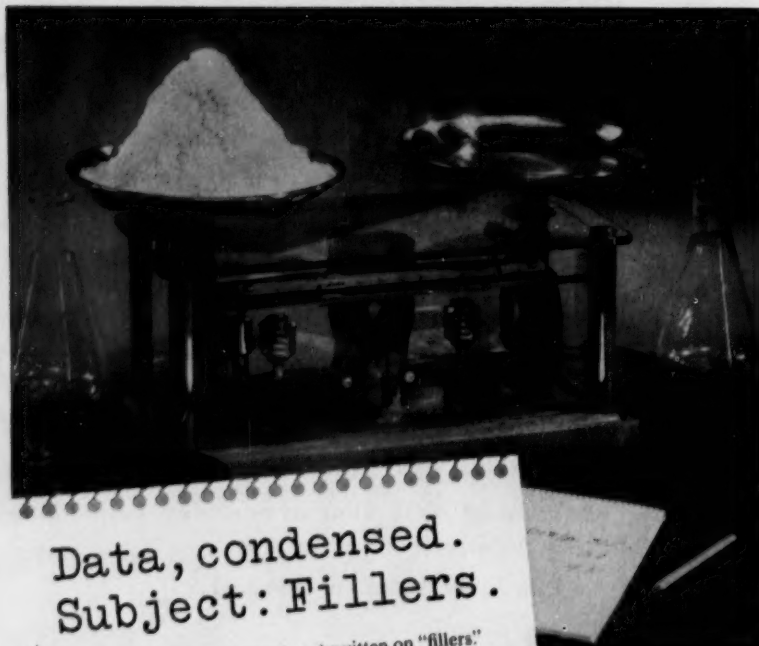
Please send the technical bulletin ☐ and samples of
SURFYNOL 82 ☐ 102 ☐ 104 ☐

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Data, condensed. Subject: Fillers.

Books could be (and have been) written on "fillers." But here—compressed into 57 seconds worth of time—are the salient points of Dicalite filler materials, quick and easy to review for possible application in your own projects.

Dicalite fillers are processed from diatomite into uniform, finely divided amorphous powders, practically pure SiO_2 .

MELTING POINT. 2900°F, approx.

MOISTURE. From 0.1 to 6%, depending on grade.

IGNITION LOSS. 0.1 to 5%, approx.

PARTICLE SIZE. Grades varying in fineness up to trace retained on 325 mesh screen. Coarser available.

POROSITY. 70 to 95%.

SURFACE AREA. 7,000 to 150,000 sq. ft./lb.

DENSITY. 7 to 13 lb./cu. ft., loose weight.

Apparent specific gravity, 0.112 to 0.21;
actual specific gravity, 2.00 to 2.35.

ABSORPTIVENESS. 120 to 300% of weight of Dicalite.

WETABILITY. Excellent.

INERTNESS. Essentially inert in aqueous and acid solutions.

Dicalite fillers supply bulk without significant weight increase and give added strength and toughness. They also improve flexibility, reduce brittleness, decrease heat conductivity, and improve abrasion resistance. In certain products, appropriate Dicalite materials provide excellent mild polishing qualities.

We will be glad to advise on the most suitable Dicalite grade for your purpose, or to work with you in developing a custom-made filler for your particular needs. Write us.

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LOS ANGELES 17, CALIF.

B & I.

Plastics, resins: Austrian output of plastics and resins increased by 40% over the past full year. Biggest problem producers face (and one the government has pledged itself to remedy): that of a 20% customs tax on raw materials.

Output of herbicides has remained stable volumewise, but consumers today have a much wider range of products from which to choose. Competition among various small companies is stiff; price reductions, frequent.

Pharmaceuticals: Drug producers in Austria are burdened with a dual handicap—a licensing-marketing system that slows down release of new products, and the fact that foreign buyers, without official medical approval, refuse to buy their goods. Of all the branches of the Austrian chemical industry, pharmaceuticals today are the most retarded. But the government is now said to be seriously concerned with the matter, and willing to clean up its end of the trouble.

Raw materials for soaps and detergents are easy now, but at steeply increased prices. That means that producers will be forced to lift retail prices in the months ahead; foreign imports will be in demand.

Taken as a whole, the prospects of Austria's chemical industry look bright. And it's a safe assumption, if any branch of business can lift Austria out of its economic trough, it will be chemicals and allied products.

* Sales were: 60% to European countries, 22% to Africa, 12% to Asia, and 6% to the U.S.

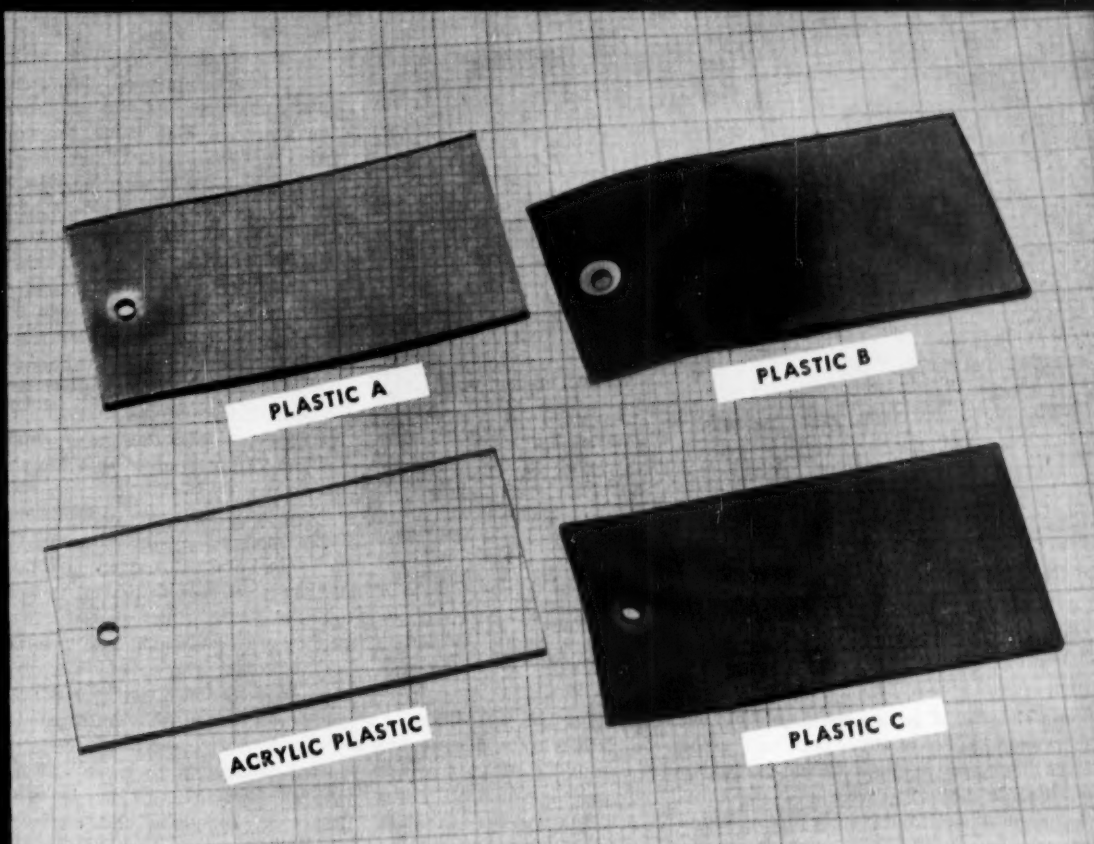
Chemical Exports Are Climbing Rapidly . . .

	Metric Tons	Dollar Value
1948	143,462	\$ 5,345,000
1950	352,962	25,009,654
1952*	335,562	29,158,080
1954	511,690	46,135,000

. . . Imports Are Mounting, too . . .

	Volume	Dollar Value
1948	122,038	\$10,227,154
1950	398,493	29,081,346
1952	438,172	53,446,154
1954	589,542	83,264,000

* Gap between volume and export value in 1952 was caused by a sharp price reduction for internationally sold nitrogenous fertilizers.



Formula for a Long Life: Use Rohm & Haas Acrylic Monomers

Here is additional evidence of how well paints, other protective coatings, and plastics based wholly or partially upon Rohm & Haas acrylic monomers resist the effects of aging.

When the samples above were first placed on test racks in Arizona, each sample was new: unmarred and transparent. Fourteen months later, all but the acrylic sample were badly discolored or severely crazed.

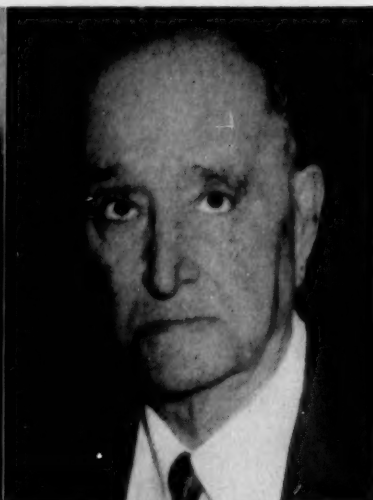
This ability of acrylic polymers to age gracefully is carried over into copolymers, too. You can expect copolymers of acrylics with vinyl chloride, vinyl acetate, vinylidene chloride, butadiene, or styrene to have better aging characteristics than corresponding non-acrylic polymers.

For additional information on Rohm & Haas acrylic monomers, write to Department SP. There's a detailed booklet waiting for you.

ROHM & HAAS ACRYLIC MONOMERS:

Methyl acrylate	Butyl methacrylate
Ethyl acrylate	Hexyl methacrylate
Butyl acrylate	Decyl-octyl methacrylate
2-Ethylhexyl acrylate	Lauryl methacrylate
Methyl methacrylate	Stearyl methacrylate
Ethyl methacrylate	Glacial methacrylic acid





WATSON, GARRETT: On trademark appeals, some chance of reversal; but . . .

Slim Hope on Patent Rulings

Your chances of getting the courts to reverse a U.S. Patent Office decision haven't improved a bit, a check of court records shows this week.

While the appeals courts fairly often reverse the Patent Office on trademark cases, the judges almost always uphold Patent Office action on patents. In fact, a spot check by *CW* shows that of 21 contested rulings on chemical patent applications and interference proceedings, the courts affirmed 100% the Patent Office decisions in 18 cases and upheld part of the Patent Office rulings in the other three cases.

This covers the 2½-year period since Robert Watson became commissioner of patents; but the situation was about the same under previous Administrations. Some embittered patent attorneys have charged that the courts have fallen into a habit of "rubber-stamping" Patent Office decisions; but others say the explanation is simply that the Patent Office staff is properly judicious in handling applications and interferences.

Better Chance on Trademarks: In the realm of trademarks, however, where there's room for vast difference of opinions on what certain words mean and suggest, you have a much better chance of getting an appeals court to disagree with the Patent Office.

Of the six chemical specialty trademarks in litigation (see table, right),

the Patent Office was upheld on two tradenames it had refused to register (Glass Wax and EZ Flo). It was reversed on one application it had denied (Plus 30) and on two interference proceedings in which the Patent Office would have canceled existing trademark registrations (Joy Suds and Sure Shot). The Patent Office ruling in the two-part Briten-Zit case was upheld as to denial of the Briten-Zit application but reversed as to cancellation of a rival company's trademark, Briten-All.

The makers of Glass Wax and EZ Flo products appealed through different channels, but the results were the same. In both cases, the courts ruled that the Patent Office was right in refusing registration because the tradenames were "descriptive or deceptively misdescriptive" of the respective products.

The court of Customs & Patent Appeals—headed by Chief Judge Finis James Garrett—reversed the Patent Office on cancellation of the Sure Shot registration because this trademark included a distinctive design and because the product concerned was entirely different from another with the same tradename.

In the three patent decisions that were modified by the Court of Customs and Patent Appeals, a total of 27 rejected claims were contested; and of these, the court picked out six claims that it found should have been granted. Three of those six claims had been turned down by the Patent Office as having been anticipated by an earlier discovery; two were rejected as obvious to those skilled in the art; and one was denied as "an improper, indefinite and alternative group." The court refuted those arguments, ordered the Patent Office to recognize the claims.

More than 100 claims were at issue in the patent decisions that were upheld in their entirety; so that current odds on getting a chemical patent decision overturned would seem to be not more than one in 20.

WINNERS AND LOSERS

(Chemical tradenames in Patent Office litigation)

These Made the Grade	These Lost Out
"SURE SHOT" for a dandruff remedy	"GLASS WAX" for a glass cleaner and polish
"JOY SUDS" for a bubble bath compound	"EZ FLO" for pesticides and other farm chemicals
"PLUS 30" for cosmetics for older women	"BRITEN-ZIT" for a floor and woodwork cleaner

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SPECIFICATIONS FOR Baker CARBON DISULFIDE, TECHNICAL

Boiling Range _____ 0.5° C.*
Specific Gravity at 15°/15° C. _____ 1.270-1.275
Residue after Evaporation _____ 0.001% Max.
Foreign Sulfides & Dissolved Sulfur _____ Passes Test**
Sulfite and Sulfate (as SO₂) _____ Passes Test**

*Boiling Point of Pure CS₂ at 760 mm. = 46.3° C.

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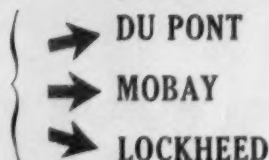
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In the urethane licensing scramble . . .

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Dominant Triumvirate

Seldom has any production picture in the chemical industry been as involved as that of polyurethane plastics. Patents and licensing agreements overlap in virtually every quarter; companies concerned have clapped a "security blanket" over release of almost all progress information.

Now, however, with one big infringement suit settled out of court, (Du Pont vs. Nopco, *CW*, May 21, p. 20; *Newsletter*, Aug. 6, p. 17) a certain amount of clarity is beginning to appear in a cloudy situation.

Three key licensing "schools"—Du Pont, Mobay and Lockheed—hold top billing on the polyurethane marquee. As principal holders of basic process and/or know-how patents, the trio is solidly entrenched in the licensing complex.

And though no one can, with complete confidence, predict just how big a dollar portion of urethane-derived profits each company will get, it's now clear that all three will share in a "miracle-growth" business.

Individually, here's how the three polyurethane leaders stand today:

Du Pont

Right now, Du Pont brandishes "broad patents" in isocyanate-polyol reaction chemistry. Already granted: 21 U.S. patents; on application, 6 more. (See table on page 30.)

The company's oldest claim hinges on U.S. Pat. 2,282,827 (Rothrock: Resinous Product and Method of Making), issued May 12, 1942.

And although this patent is due to expire in 1959 (when most of Du Pont's "broader" patents in the field run out), the company will still count on some narrower patents to continue urethane licensing.

Tight Reins: This is Du Pont's current patent licensing practice: it grants manufacturers (via general license agreements for royalties) permission to make: (1) urethane cellular reaction products (including both rigid and flexible foams); (2) polyisocyanate coating compositions; (3) urethane adhesives; (4) urethane-rubber adhesives; (5) solid urethane rubber compositions.

In one other bailiwick, however—that of urethane fibers—Du Pont has so far negotiated no agreements.

This could mean that: Du Pont is holding the urethane fiber field for itself, or has not been approached for a fiber license as yet. (Du Pont maintains it has *not* been approached).

To date, this is how Du Pont licensing shapes up:

- **Foams:** Some 80 contracts with foam makers are now in force. But though elastic- and rigid-foam makers are included in the list, Du Pont has granted this type of license only after deliberating on the end products the company intends to make.

- **Urethane-rubber adhesives:** Du Pont claims 75-80 contracts in elastomer making (this is its major source of profits—in terms of royalties and isocyanate sales—so far).

- **Finishes and coatings:** "Very few," says Du Pont, "of this type of license are on file now, but the number is expected to grow."

- **Urethane adhesives:** Two such contracts "were executed only the other day."

- **Solid urethane-rubbers:** A few licenses in this category have been issued to large manufacturers of synthetic rubbers. Two such products are now being made: Du Pont's own solid urethane Adiprene B is now under-

going field tests, and Goodyear's Chemigum SL.

How Much? In light of the handsome licensing niche the Wilmington firm has carved for itself in urethanes, there's been a great deal of—sometimes glorious—speculation as to the profits Du Pont will garner. These are the base figures: 1½% of net selling prices (or equivalent) on products subject to royalty; 35¢/lb. on urethane-rubber-base adhesives; plus profits from sale of Du Pont isocyanates.

Mobay

The other giant in today's urethane licensing picture is Mobay Chemical Co. (St. Louis, Mo.). It's forte: know-how licensing. (It will also bring an isocyanate plant onstream later this month.) Mobay—a Monsanto-Bayer joint enterprise—has this position: to date, six U.S. patents have been issued to Bayer and are all assigned to Mobay. What's more, Mobay claims, it has 120 patent applications in the works, with more to come.*

Mobay's Flock: Currently, company executives say, Mobay has signed up 12 licensees—largely covering production of cellular urethanes. Four contracts, however, have recently been lined up concerning "Vulcollan"—Bayer's noncellular urethane elastomer.

In foam licensing, Mobay has a flat fee of \$40,000 (half of which is due 30 days after signing, the balance within six months). In addition: companies must buy Mobay processing equipment ranging in price from \$5,500 to \$45,000, and grant Mobay a continuing royalty on a sliding scale.†

Payments begin when patents (under which licensees will operate) are actually issued. No contracts may be canceled during the first five years of issuance.

In return for fees, Mobay grants a "blank check" to all company-owned urethane know-how—now and as developed in the future.

On this subject of future development in the field, one Mobay executive says: "The key to much of the success in foam urethane production will be processing machinery." Others agree

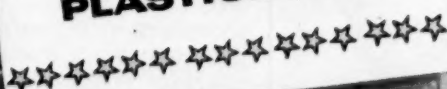
* Some of these patents were originally filed by Farbenfabriken Bayer; others Mobay applied for itself.

† Now fixed at 1.0% of the net selling price of finished goods (on the first \$1 million sales), and tapering off to 0.125% (on all sales over \$20 million).

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RCI DICAPRYL PHTHALATE	0.975	8.22	0.010	125	99.7%	425°F.	485°F.	287.1	391
RCI DIOCTYL PHTHALATE	0.989	8.22	0.010	50	99.7%	450°F.	475°F.	287.1	391
RCI DIBUTYL PHTHALATE	1.045	8.71	0.010	50	100%	360°F.	395°F.	403.2	278.3
RCI DIDECYL PHTHALATE	0.965	8.04	0.010	100	99.7%	457°F.	510°F.	251.2	446.7
RCI DIOCTYL SEBACATE	0.911	7.58	0.010	75	99.7%	455°F.	490°F.	262.9	426.7
RCI DIBUTYL SEBACATE	0.936	7.80	0.010	50	100%	390°F.	425°F.	356.8	314.5
RCI DI-ISO-OCTYL PHTHALATE	0.988	8.22	0.010	50	99.7%	450°F.	475°F.	287.1	391

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B & I.

that polyurethane technology isn't as simple as it appears on the surface, requires highly specialized equipment plus a good deal of fundamental know-how.

Acknowledging this fact, Mobay also agrees to train technical teams of licensee employees.

Lockheed

Perhaps the most limited in scope—albeit possibly strong—patent position among the polyurethane triumvirate is Lockheed's. The aircraft company has at least eight U.S. patents on the books now (three of them date as far back as 1948). Lockheed's current boast: many more patents are in process.

All eight already granted deal with rigid foam production—process improvement developments pioneered during the war.

Today Lockheed lists two licensees only—American Latex Products Corp. (Hawthorne, Calif.) and Nopco Chemical Co. (Harrison, N.J.).

But both American Latex and Nopco also hold licenses from Mobay and Du Pont—a fact that could be interpreted as an attempt by each to protect its position.

This type of dual licensing is bound to continue—unless one or another of the top contenders realizes a unique legal status. But that is not discouraging any would-be polyurethane makers.

In These Patents . . . Key to Urethanes' Future

Du Pont

U.S. 2,282,827; 2,284,637; 2,284,896; 2,292,443; 2,333,639; 2,358,475; 2,374,136; 2,430,479; 2,277,083; 2,333,914; 2,339,912; 2,339,913; 2,349,756; 2,381,186; 2,400,474; 2,415,839; 2,417,424; 2,417,792; 2,436,222; 2,439,369; 2,439,514.

Mobay

U.S. 2,593,829; 2,620,516; 2,621,166; 2,650,212; 2,657,151; 2,678,869.

Lockheed

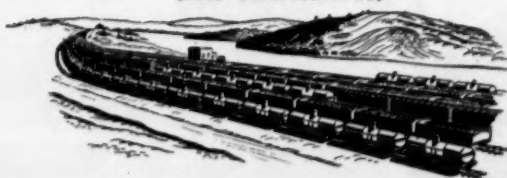
U.S. 2,577,279; 2,577,280; 2,577,281; 2,591,884; 2,602,783; 2,634,244; 2,642,403; 2,698,838.



Quality Controlled

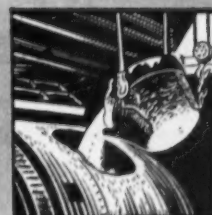
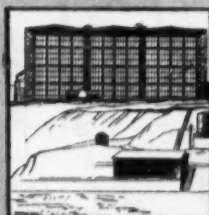
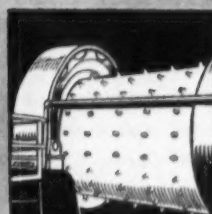
Check Tennessee's

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- ☐ COPPER CARBONATE
- ☐ COPPER HYDRATE
- ☐ CUPRIC CHLORIDE
- ☐ CUPRIC OXIDE
- ☐ MANGANESE SULFATE
- ☐ MONOHYDRATE MANGANESE SULFATE
- ☐ MANGANESE OXIDE
- ☐ MANGANESE CARBONATE
- ☐ FERRIC SULFATE
- ☐ SULFUR DIOXIDE
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B & I.



HARRIS & EWING

AUTHOR NELSON: In new book on chemical union, a thesis that . . .

Strikes Aren't Needed

An inside story on how unionization got started in the U.S. chemical industry during the 1930s, and of the interunion feuds that still figure in the industry's labor relations, is told by British-born, ex-machinist James Nelson in a newly published book, "The Mine Workers' District 50."

Nelson—now a U.S. Dept. of Labor official at Boston—was cofounder and first president of District 50, a union that now claims 100,000 members at chemical process plants throughout the country. He not only looks into the union's past, but also offers suggestions for strike-free union-management dealings in the future. Among his recommendations:

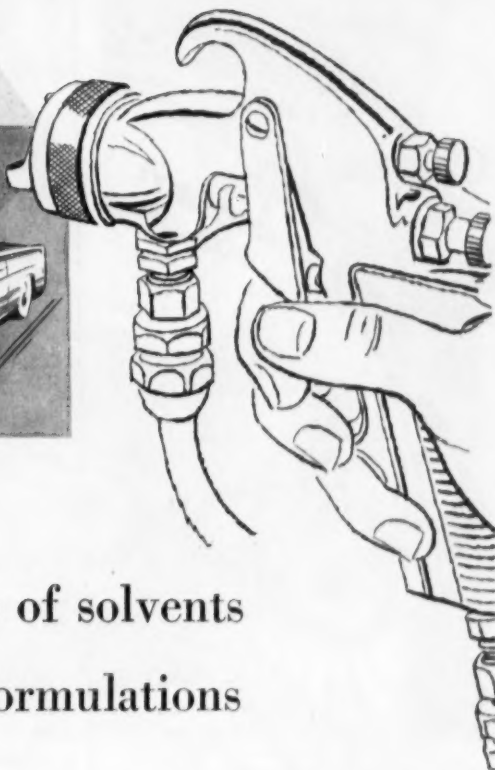
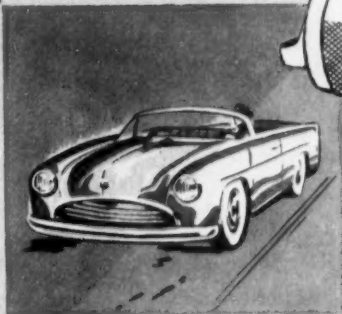
- Plantwide bargaining in the industry—a policy favored by both chemical management and labor, but not by the National Labor Relations Board.

- Local union-management groups to handle grievances "not in the spirit of a court, but in the spirit of a clinic."

- Long-range wage policies in accord with the nation's economic needs.

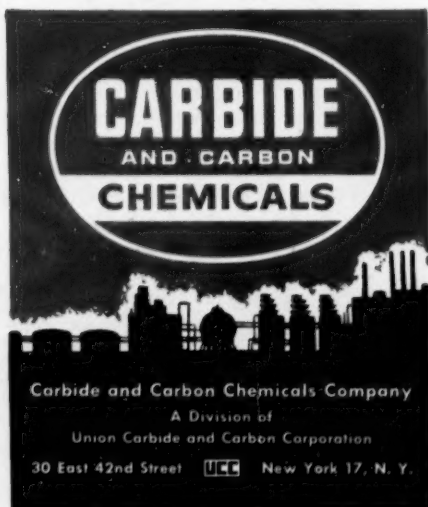
Interviewed by *CW*, Nelson—who calls himself a "middle-of-the-roader" in labor matters—predicts that eventually UMW will join the soon-to-be-merged AFL and CIO—but probably not while John L. Lewis heads UMW.

Biggest aid in forming District 50, Nelson says, was the New Deal's National Industrial Recovery Act.



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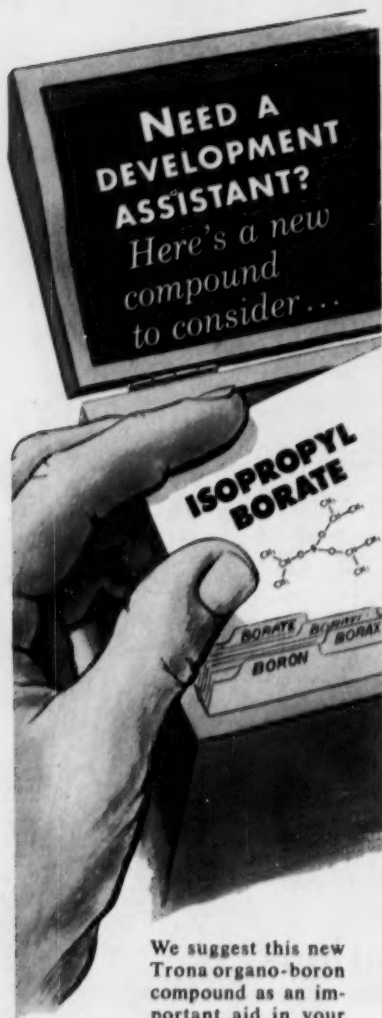
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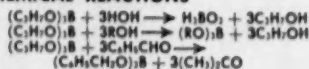


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FOREIGN

Science Training/Middle East: As part of its over-all plan to encourage industrialization of underdeveloped areas, the United Nations is now sponsoring teaching of chemistry in Indonesia, Jordan and other Mideast countries.

Classes (*see cut*) assemble laboratory equipment from string, discarded light bulbs, and chair springs; close to 100 such makeshift laboratories have been established in remote areas. Credited with the idea: Canada's Herbert Grantham of the UN's Educational, Scientific and Cultural Organization.

Sulfuric Acid/Mexico: Industrias Quimicas de Mexico, S.A., plans to build a sulfuric acid plant in the state of Michoacan, Mex.

No precise plant site has been selected as yet, but company officials say they're shooting for a 1956 completion date. Capacity will be 100 tons/day.

Uranium/North Africa: A professor of science at the University of Algiers claims this week that North African phosphate rock contains uranium to the extent of 100 grams/ton, and can be extracted as a by-product of superphosphate production.

French North Africa, second largest phosphate rock producer in the world, now turns out 7 million tons/year; therefore the potential uranium output runs to the order of 700 tons/year. However, most North African rock today is exported in crude form, little is processed into superphosphate.

Cosmetics/Colombia: Cosmeta Ltda. will build a cosmetics plant at Bogota, Colombia, under license from Mouson, Lingner (Dusseldorf) and Schwarzkopf. The operation will be wholly financed with capital of Germans living in Colombia; raw materials will be obtained both in Colombia and in West Germany.

Cellulose/Yugoslavia: The first of four cellulose plants under construction in Yugoslavia is now in partial operation.

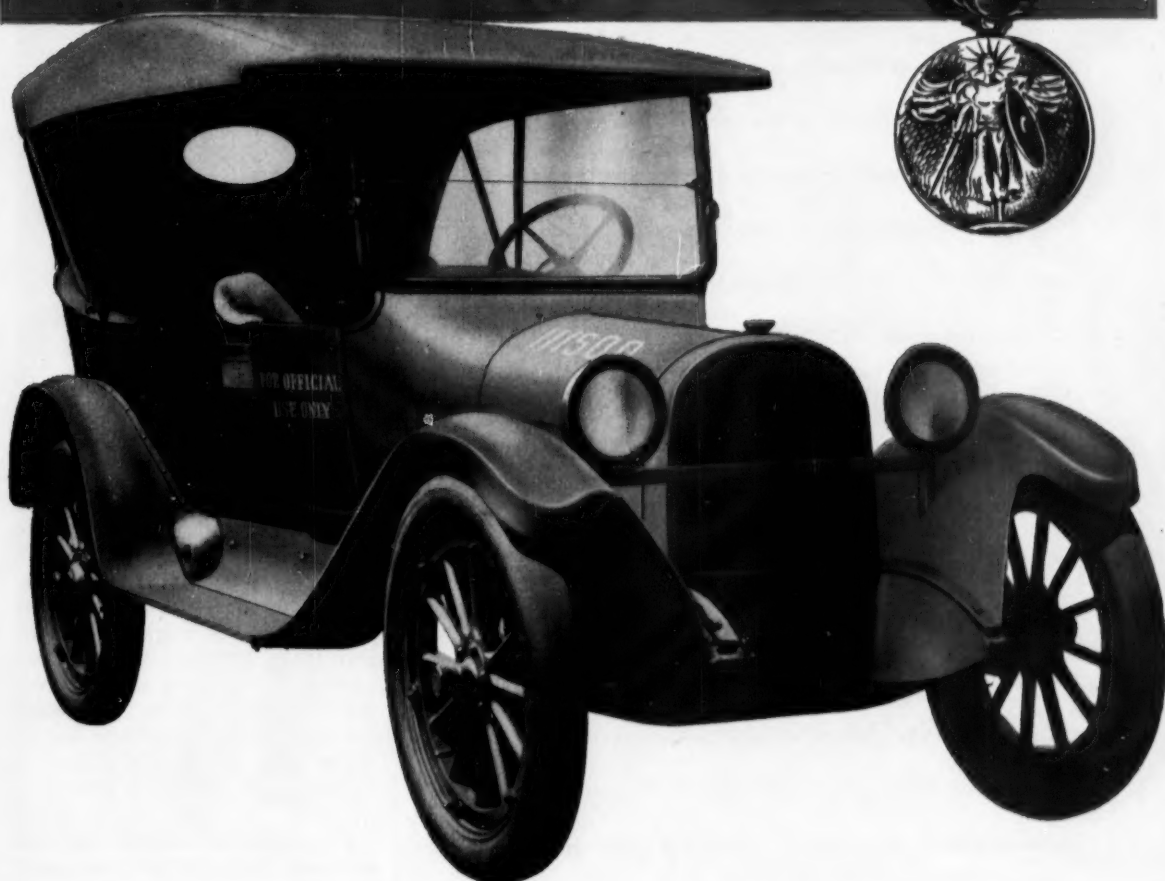
Located at Prijedor (Bosnia), the plant has a rated capacity of 24,000 tons of cellulose, 22,000 tons of paper, and 16,800 tons of paper bags annually.

Dyestuffs/Pakistan: A \$3-million dyestuffs plant in Karachi, Pakistan, will go into production early in 1958 as the result of an agreement between Pakistan's Industrial Development Corp. (PIDC) and Westphalian Bayer Works (West Germany).

Construction will start within the next few months; the Pakistan government estimates it will save in one year (in foreign exchange) as much capital as it puts into the plant—\$3 million.

Investment/Egypt: Two German firms, Farbwerke Hoechst and Badische Anilin—both successor companies of I. G. Farben, are reported to be seriously considering construction of facilities in Egypt. Hoechst is said to favor building a pipe fabricating plant; Badische is looking over the possibility of heavy-chemical units.

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FOR TECHNICAL ASSISTANCE—If you have a solvents problem or want further information on the specifications and characteristics of Esso Solvents—write or call our office nearest you. Our technicians will be glad to assist you.



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SOLD IN: Me., N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., Del., Md., D. C., Va., W. Va., N. C., S. C., Tenn., Ark., La.

ESSO STANDARD OIL COMPANY

Boston, Mass. — Pelham, N. Y. — Elizabeth, N. J. — Bala-Cynwyd, Pa. — Baltimore, Md. — Richmond, Va. — Charlotte, N. C. — Columbia, S. C. — Memphis, Tenn. — New Orleans, La.

"Alamask" CASE HISTORY

A well-known oil refinery had an injunction to stop operations of its catalytic cracking unit, due to odors emanating from spills, separators and other wastes, stack fumes and products of combustion. RHODIA was consulted and ALAMASK used. Here is an excerpt from a letter from the refinery:

"Very effective masking of odors resulted and in view of our actions all cases against us were withdrawn. We are very grateful to RHODIA for what they have done for us and are happy to pass on our experiences to others in similar difficulty."

If odors from your refinery are contaminating the community, RHODIA can help you, too. Our experienced odor engineers will be happy to consult with you on your malodorous problems.

Rhodia INC.

230 Park Avenue, New York 17, N. Y.

In Canada: NAUGATUCK CHEMICALS, Division of Dominion Rubber Co., Ltd.
MONTREAL • TORONTO • ELMIRA • WINNIPEG

B & I.



EX-GOVERNOR ANDERSON: To FTC, a veteran prosecuting attorney.

LEGAL.

For GOP Majority: Keeping the Republican majority in the five-man Federal Trade Commission is Norwegian-born, 51-year-old Sigurd Anderson, former governor of South Dakota. Anderson brings to FTC experience as a lawyer and prosecuting attorney, having served as state's attorney in his home county, as assistant attorney general before World War II, and as state attorney general for five years before his election as governor.

U.S. Called Accountable: Two suits have been filed at Philadelphia against the U.S. government by survivors of persons killed in last May's explosion at the Publiker alcohol plant there. It's alleged that the U.S. was in charge of that section of the plant.

Employees Face Risks, Too: In Britain, at least, it seems to be the law—pending an appeal to the House of Lords—that an employer doesn't have to shoulder all the responsibility for injuries and damages caused by use of relatively unknown materials in his plant. The Court of Appeal has dismissed a suit brought by a woman who developed beryllium poisoning after working less than three months in 1947 in a plant where ingredients were mixed for fluorescent light tubes. The court found that the company—from its past experience—had no reason to suspect that beryllium was so toxic.

THIS MAN IS MAKING
HIS REPUTATION . . .



HAVE YOU CHECKED THE SAVINGS YOU MIGHT GET WITH 73%?

The gentleman above has just been struck by an idea. It may very well save his company an appreciable amount of money. The thought: Dow caustic soda in 73% solution is probably *his* best buy, too.

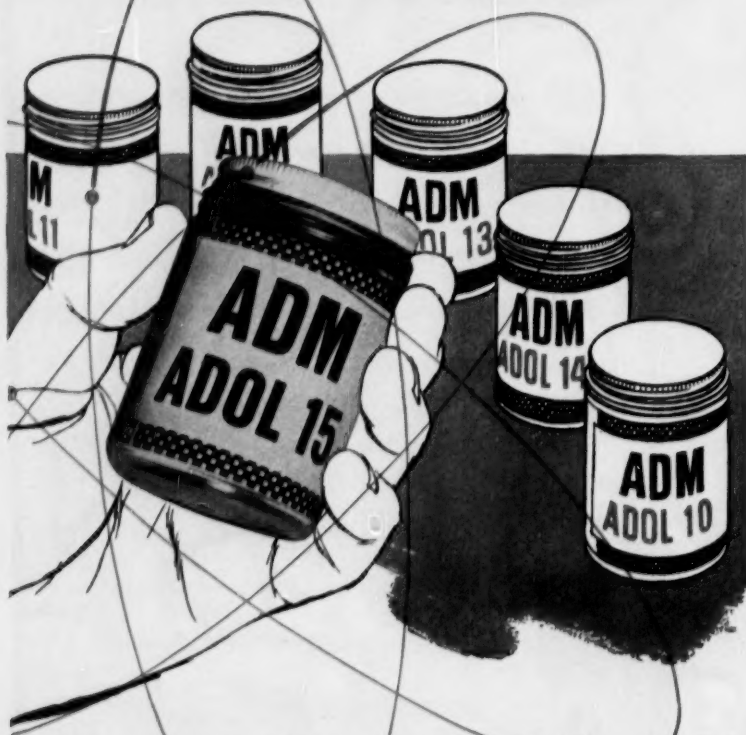
If someone in *your* organization hasn't checked the changed caustic picture lately, you may be missing this chance to save. Hundreds of caustic users *have* discovered the new economy of Dow's 73%. Why an economy? Because today's *increased freight rates* more than cancel out the narrow price difference between 50% and 73%.

A second point of savings, particularly for greater volume users, is the *unloading operation*. Many man-hours are saved because 73% unloads in the same amount of time as a car containing a lower concentration.

A Dow Technical Service man can give you an accurate picture of the savings you could realize with 73%. And don't rule out 73% even if you're now on solid or flake. The pertinent, factual information you get so easily is one of the advantages of dealing with Dow. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. AL 392B.

you can depend on DOW CHEMICALS

NEW LAURYL ALCOHOLS



ACIDS GLYCERIDES SPERM OILS ALCOHOLS

from vegetable,
animal, marine oils
and fats.

Other ADM Products:

Linseed Oil, Soybean
Oil, Fish Oil, Paint
Vehicles, Vinyl Plasti-
cizers, Foundry Bind-
ers, Industrial Cereals,
Vegetable Proteins,
Wheat Flour, Dehy-
drated Alfalfa Meal,
Livestock and Poultry
Feeds.

ADM's new lauryl fatty alcohols are derived from vegetable oils and fats. ADOLs 10, 11, 12, 13, 14 and 15 are all fractionated to definite composition and are furnished in uniform and consistent specifications and composition as to chain length. These are all water white, non-corrosive, oily liquids possessing a mild fatty odor. They range from 50% to 90% pure C₁₂ lauryl alcohol depending on grade.

ADOL lauryl alcohols are among many new saturated and unsaturated fatty alcohols being produced in tank-car and LCL quantities at ADM's ultra-modern Ashtabula, O., plant. Others are: cetyl, stearyl, cetyl-stearyl, arachidyl-behenyl, hydroxy stearyl, stearyl oleyl, oleyl, behenyl, linoleyl, linolenyl, arachidonyl-clupanodonyl, erucyl and ricinoleyl. None of these ADM Chemifats is consumed by ADM; the entire plant output is for sale to industry.

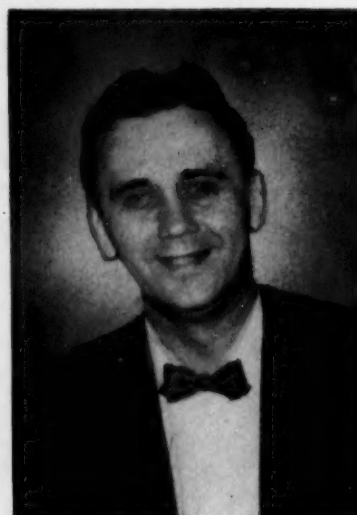
Here is something to work with . . . new fatty alcohols of improved properties, higher purity. Write on your letterhead for samples and advanced technical bulletins.

Archer-Daniels-Midland company

CHEMICAL PRODUCTS DIVISION

2191 WEST 110th STREET • CLEVELAND 2, OHIO

B & I.



OCAW'S CURRAN: As union eyes technical employees, he'll scout out . . .

What 'Eggheads' Want

Over the coming months, your company's scientific, engineering and technical employees are going to be wooed by various labor unions and professional organizations in a hotly competitive courtship.

Following the AFL's decision to launch its current drive for membership in its American Federation of Technical Engineers—a drive that's now being pressed in and around Houston, Tex.—the Oil, Chemical & Atomic Workers (CIO) has set up a special committee to study the possibility of organizing professional and technical employees in the oil and chemical industries.

Heading this committee will be OCAW Vice-President John Curran, and his mission will be to find out exactly what the "eggheads" want in the way of collective bargaining. Curran's committee will report to the OCAW executive board by next June; and the executive board then will draw up recommendations to be presented to the union's 1956 convention in St. Louis.

The Engineers & Scientists of America—a band of collective bargaining groups for professional employees—has formed a committee to look into the forthcoming AFL-CIO merger and efforts by AFL and CIO affiliates to organize engineers and technicians. A preliminary report is due next week.

Here's how you can use

STRATEGIC PURCHASING

*to help your company maintain
a sound competitive position*

As profit margins tighten, your purchasing strategy becomes a vital force for success.

The way you purchase heavy chemicals, for instance, can influence your company's profits in the years ahead.

So it becomes increasingly important for you to seek every possible economic advantage when you select a chemical supplier.

Here, for example, are a few things to look for, when deciding on a source for caustic soda, chlorine, and other chemicals:

1. Supply security. How flexible are your supply lines? For instance, a supplier with plants located on deep water may be able to offer you a choice of rail or water delivery. This can insure you steady supply, in case of rail service interruption.

2. Engineering help. A supplier's

engineering staff can often be valuable to you when you are setting up a new chemical process or caustic and chlorine handling systems—not only with advice, but with actual design assistance.

3. Smooth processing. You'll find it helpful to work with the supplier's technical service men who visit you periodically. Often these men can spot potential problems and ward them off before they cause you trouble.

4. Safety programs. Your men can benefit from safety suggestions offered by your supplier. You should have on tap the latest in safety equipment, plus up-to-date information on safe handling of chemicals.

5. Economy. Choose a supplier who wants to help you cut your operating costs; who will go all the

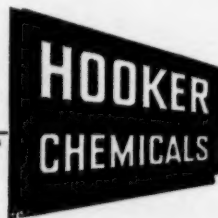
way with you in arriving at the best, most advantageous method of shipping and handling for your conditions.

6. Experience. Above all, choose a supplier who is familiar with your industry. It takes years of experience to acquire an understanding of the problems you face, and the know-how to help you solve them quickly and economically.

Are you getting your fair share of these strategic purchasing advantages?

Many of our customers in the chemical industry feel that they get these advantages in buying from Hooker, a supplier of basic materials to the chemical industry for fifty years.

In the light of the growing importance of these factors, isn't this a good time to review your policies on sources of chemical supply?



1905—Half a Century of Chemicals

From the Salt of the Earth—1955

HOOKER ELECTROCHEMICAL COMPANY

3 Forty-seventh Street, Niagara Falls, N. Y.

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JEFFERSON LAKE
Bright Canary Yellow
CRUDE SULPHUR
99.5% MINIMUM
PURITY
Produced by our
3 MINES IN TEXAS and LOUISIANA
and our
SULPHUR RECOVERY PLANT - MANDERSON, WYOMING

Carload Shipments
MOLTEN - FLAKED - LUMP

JEFFERSON LAKE
SULPHUR COMPANY

General Offices - Whitney Building
NEW ORLEANS, LOUISIANA

ALCOHOLS

PROPRIETARY SOLVENT BUTYL ALCOHOL
ISOPROPYL ALCOHOL BENZYL ALCOHOL
METHANOL

• Delivery from Local Stocks

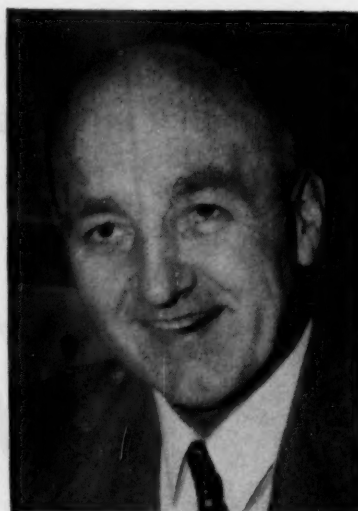
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B & I.



NLRB'S RODGERS: Acting as chairman, a protégé of late Senator Taft.

LABOR.

Chairman Pro Tempore: Serving as acting chairman of the National Labor Relations Board these days is Philip Ray Rodgers, who was the second man to be named to the board by President Eisenhower. Rodgers has been a member of NLRB for two years now, but he was already intimately familiar with the law governing that agency—the Taft-Hartley Act—long before that. Rodgers had served as staff director of the Senate Labor Committee while that committee—under the late Sen. Robert Taft—was working on the T-H bill. So far, Eisenhower hasn't tipped his hand as to who'll be appointed board chairman succeeding Guy Farmer, who recently resigned.

No Action Expected: The CIO has joined the AFL in calling for Congressional action to halt "piracy" of plants from one part of the country to another; but Washington observers figure the chances are against much being done on this score. Reason: favoring one region over another is politically almost impossible.

The labor groups proposed that plant migration be checked by ending federal income tax exemption on municipal bonds issued to finance "run-away" plants and by raising the federal minimum wage to \$1.25/hour. At the same time, they asked for federal aid for the areas that have lost plants.



ATLAS

chem-memos

CHEMICALS DIVISION
ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE
ATLAS POWDER COMPANY, CANADA, LTD., BRANTFORD, CANADA

KEEPING TRANSPARENT PACKAGES FOG-FREE...by using Atlas surfactants

Fruit, vegetables, meat or flowers packed in transparent materials like cellophane or polyethylene film... can be kept under refrigeration without any fog appearing on the inside of the container. The trick is done by using surface active chemicals. Atlas SPAN® 40 (sorbitol monopalmitate) and TWEEN® 85 (polyoxyethylene sorbitan trioleate) are often called on for this purpose. The manufacturer of the packaging material applies the Atlas chemical to the surface of the film, or includes it directly in the sheet.

Because it is surface active, the Atlas chemical reduces the surface tension of water that may condense on the film. Thus, water cannot accumulate in drop-

lets that would give a foggy appearance... but spreads out evenly instead.

You can demonstrate this principle by dropping a big globule of water on a surface. If you touch it with barely enough surfactant to cover a pinhead, the globule will immediately spread out flat. The higher the spreading coefficient value of the surfactant, the greater is its ability to do this trick.

SPAN and TWEEN products are adaptable to various types of films... the choice depending on specific requirements for odor, taste and non-toxicity. For copies of the applicable patent on this subject (Wingfoot Corporation, Patent No. 2,561,010), write or call Atlas today.



TIPS ON MAKING PRODUCTS

PACKED IN

"SQUEEZE BOTTLES"

Flexible, non-breakable containers of polyethylene have become increasingly popular

for packaging a variety of products. However, certain ingredients and formulas packed in this type of bottle may cause the container to deform in storage.

Atlas research chemists are interested in this problem, because many manufacturers use polyethylene containers for products that incorporate Atlas emulsifiers. A series of tests has been made in our laboratories on the effects of various ingredients, emulsifiers, and types of emulsions on the stability of such containers. We found that properly formu-

Atlac® 382 Resin cuts cost of hamburger machine

The manufacturer of an automatic machine which can turn out thousands of individual raw meat patties per hour has saved \$15 per unit in the manufacture of his new model, through use of an Atlas polyester resin, ATLAC 382. Important parts of the machine, including the hopper and gear-driven compressor rollers, were redesigned to be made from reinforced plastic based on ATLAC 382, instead of from cast metal. This eliminated expensive machining, welding and forming of metal parts, and reduced costs of both labor and parts.

According to a recently published article on the patty-making machine, the factors leading to the selection of this ATLAC 382 plastic over several other types of thermosetting materials were its combination of low weight and high strength, dimensional stability and excellent flow characteristics. Further, the superior resistance of ATLAC 382 to meat juices, washing detergents and many other chemicals made it a natural choice for this particular use.

We'll be glad to send you a reprint of the article, showing details of parts and molding technique. A bulletin on ATLAC 382, giving properties and chemical resistance data, is also yours for the asking. Samples are available for your own testing, of course.

lated oil-in-water emulsions do not affect the container, but that water-in-oil preparations often cause bottle deformation.

To get a compilation of the results of our tests, just write to Atlas for a copy of the article, "Cosmetic Emulsions in Polyethylene Containers," by Phyllis J. Carter and William C. Griffin. Even if you aren't in the cosmetics business, you'll find much useful data on the selection of materials and ways to test products that you're packaging this way.

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1896

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Tomorrow is here...

Many of the chemicals we make today were the "tomorrows" of times past. Many of the uses for these chemicals, too, were unthought of at the time these were first made available. Many of the users, too, are industries that were unknown and unthought of a few decades ago.

Tomorrow's "tomorrows" are already part of everything we do and make. And what we know... or are learning... we are ready to share among all users and potential users of Oldbury products.

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Plants: NIAGARA FALLS, N.Y. COLUMBUS, MISS.

NOW...WHICH SIZE FITS YOUR DELIVERY NEEDS?



Model No. 146 handles up to 4000 lbs. on heavy trucks and semi-trailers.

Model No. 145 handles up to 2000 lbs. on 1½-Ton and larger trucks and semi-trailers.

Model No. 130 for Pick-up Trucks with steel express bodies.

ANTHONY LIFT GATE HYDRAULIC

NEW ANTHONY "LIFT GATE"

For ¾-Ton and Larger Trucks

This new lower priced Anthony Model No. 144 "LIFT GATE" handles loads up to 1000 lb. (other sizes from 800 to 4000 lbs. are available). Lift Gates in all sizes let one man do the work of three or more when loading or unloading a truck with heavy bulky freight — and in one-third the time. Loading and unloading is done with ease by moving one conveniently located lever to control the powerful hydraulic action of the "LIFT GATE". With the time saved in loading and unloading you can double your deliveries. Damage to merchandise and personnel accidents are greatly reduced. One "extra" delivery each day will pay for your Anthony "LIFT GATE". Write today for complete information. Dept. 5513

ANTHONY COMPANY • Streator, Ill.

B & I.

KEY CHANGES

Bernard M. Machen, to assistant general manager, chemical sales, Lion Oil Co. (El Dorado, Ark.).

Richard M. Young, Jr., to assistant sales manager, Ultra Chemical Works, Inc. (Paterson, N.J.).

G. Morgan Homewood, Jr., to manager, market research, J. T. Baker Chemical Co. (Phillipsburg, N.J.).

W. L. Dixon, Jr., to general manager, Western States Chemical Corp. (Nichols, Calif.).

Gordon P. Larson, to vice-president, Oxy-Catalyst, Inc. (Los Angeles).

John P. Holmes, to director, Celanese Corp. of America (New York).

H. Stanley Lawton, to sales manager, chemical specialties, Dewey and Almy Chemical Co. Division, W. R. Grace & Co. (Cambridge, Mass.).

J. Boyd Britton, to vice-president, operations, Godfrey L. Cabot, Inc. (Boston).

Paul E. Gishler, to manager, research and development, Canadian Chemical Co., Ltd. (Edmonton, Alta., Can.).

John L. Rendall, to manager, new inorganic products, Minnesota Mining & Mfg. Co. (St. Paul, Minn.).

F. Franklin Moon, to vice-president, W. R. Grace & Co. (New York).

Armand Thieblot, to director, Vitro Corp. of America (New York).

C. A. Stokes, to vice-president and technical director, Texas Butadiene & Chemical Corp. (Houston, Tex.).

UNITED COMMUNITY CAMPAIGN



Suds, Shines and SELLS

The growing preference for liquid detergent formulations is showing up in the sales picture . . . last year there was a phenomenal industry-wide increase in these sales.

And no wonder . . . liquid detergent formulations offer real economy; instant solubility in any water; a pleasing fragrance; sneeze-free washing; dishes that dry shining bright; no sink scum to scrub away.

Many of today's best-selling liquid detergents are formulated with Atlantic ULTRAWETS. Economy is one reason. High performance characteristics allow a saving on the quantity needed to maintain product efficiency. Add to this saving a further one: you can buy the ULTRAWETS at significantly low prices in tank car or bulk lots.

Ask us for detailed information on the ULTRAWETS. Our Chemical Products Sales Division can supply formulations; or help you develop your own. Write, wire, phone or send the coupon today.

ATLANTIC
PETROLEUM
CHEMICALS

Philadelphia, Providence, Charlotte, Chicago

In the West: L. H. Butcher Co.

In Canada: Naugatuck Chemicals Division
of Dominion Rubber Company, Ltd.

In Europe: Atlantic Chemicals S.A.B.
Antwerp, Belgium

THE ATLANTIC REFINING COMPANY
Dept. H-9, Chemical Products Sales
260 South Broad Street, Philadelphia 1, Pa.

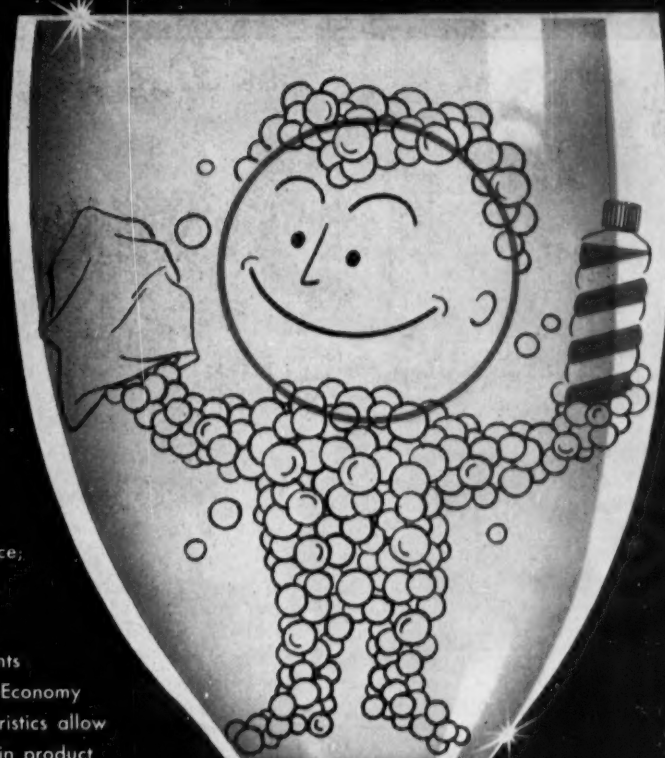
Please send me information on the ULTRAWETS for liquid detergent formulations.

Name

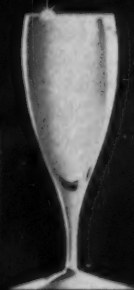
Firm

Street

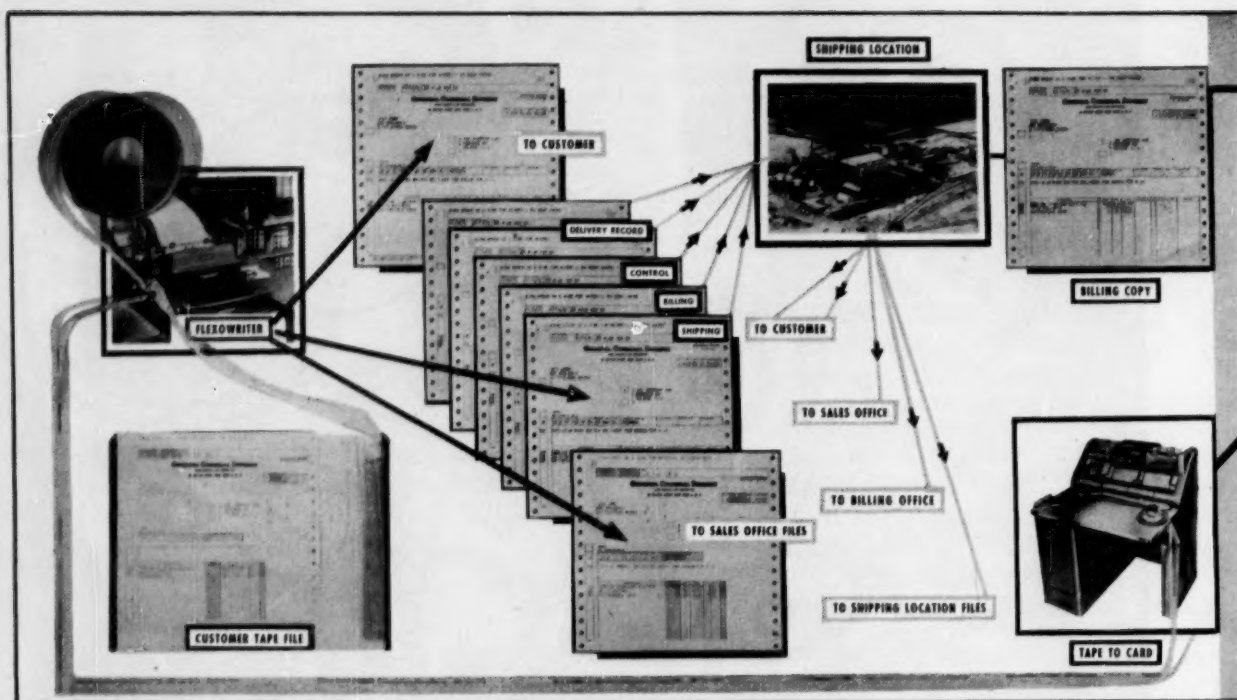
City Zone State



The ULTRAWETS wet, penetrate,
clean and emulsify



DISTRIBUTION



For More Sales: Integrated Data

What is the future of integrated data processing (IDP) in the chemical industry? There's one answer that can't miss: Progress—both in quantity and in new applications.

Recent developments unmistakably augur well for the punched-hole tape: (1) adoption of IDP by many a large chemical firm (Olin Mathieson, Du Pont, Dow); (2) new wrinkles in the latest chemical trade application (Allied's General Chemical Division).

General Chemical, now installing a decentralized-type system*, is automating the tabulative phases of chemical sales-order processing, is currently designing an IDP system for purchasing.

Integration of a calculating card punch, tabulating printer, and a summarizing card punch turns the trick for tabulating by:

- Adjusting recorded shipment weight to the identical scale of the quoted price; multiplying unit price by product quantity; figuring freight charges and applicable sales taxes; fig-

uring value of returnable containers.

- Adding items for the invoice and printing it with a grand total of all charges.

- Punching an accounts receivable card for each invoice. The card then serves as the customer ledger.

But, in two years, General Chemical hopes to speed automation still more by renting a computer setup in place of the present calculator and related equipment.

Roadblock to earlier IDP mechanization of tabulation sprung from the facts that machines—as well as humans—can err, and that control procedures (still necessary) were difficult to apply. Now, however, with reliability of electronic and mechanical office gadgetry established—and having devised a feasible control method**, General Chemical took the plunge. Guiding the installation: Harry S.

** Key part of the method: a check of the total of all figures in the "quantity" column for a small batch (to 25) of invoices against a corresponding figure derived from the original shipping order. The shipping order addition is done manually with an adding machine; the invoice totals are figured from the punched cards.

Bowen, vice-president and divisional comptroller; Robert Moore, systems expert.

This week, mild-spoken, academic Moore told *CW* just how his firm's setup will work (see p. 45), what it does.

Gains Abound: Naturally, the firm expects to count many a gain. Some soon to be realized:

- Faster processing of paper work and billing.

- Reduced difficulty and cost in attaining accuracy.

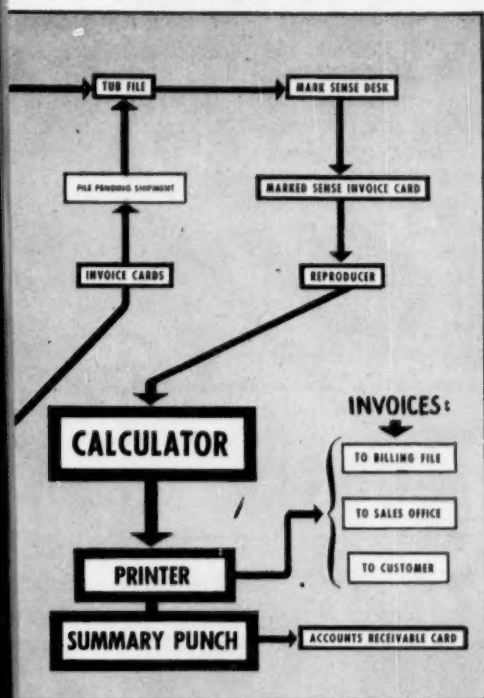
- Increased savings. These arise from the switch of technologically displaced workers to other jobs; interest value on money owed the firm (faster billing should produce faster payment); lessened effect of absenteeism. Conservative estimate: \$25,000/year.

- Automatic production of business data from an IDP by-product (invoice cards).

- Sufficient "know-how" to be able to advise other Allied divisions when IDP is installed company-wide.

Future and Significance: Undoubtedly, IDP will continue (Cyanamid

* For an example of centralized application, see *CW*, Aug. 28, '54, p. 56.



How GC Does It

In General Chemical's decentralized application, repetitive information on each product bought fairly regularly is recorded by common-language typewriters (Flexowriters) by punch-holing a paper customer tape. The same machine can then type future orders from the customer tape, variable data being added manually. Orders are prepared in octuplicate; disposal of each copy then follows the pattern shown in the illustration (a bill of lading copy—not shown—is sent to the shipping location). About 25 sales offices will have customer tapes.

While the common-language typewriters write the order, a new tape, with the variable data, is punched. This sales tape contains all orders garnered by the office in one day. Sent to the billing office, the tape's data is converted to punched-hole invoice cards complete with verbal data description. The cards are then filed to await shipping data.

The shipping location fills the order, adds its data (car numbers, actual

weights, etc.) to its copies of the octuplicate form, distributes them (see cut). The billing office uses its copy to add shipping data to the invoice cards via "mark-sensing" (pencil marks in numbered places).

Tabulating section then takes over, first converts the pencil markings to punches.

Next step, the invoice cards get the calculator treatment, pick up punches for customer charges, move on to the tabulating printer. This puts out a five-copy, continuous-form invoice with a printed grand total. Simultaneously, an electrically coupled summary punch perforates one accounts receivable card per invoice.

Invoice cards are then free for sales and cost analysis, operations research. Accounts receivable department applies controls**, disposes of the invoice copies, makes a customer ledger from its card. Naturally, such accounting functions as customer statements, and remittance vouchers can be run from the card.

Processing

is seriously considering it) its route through the chemical industry, and Allied's mechanization of the compute phases of order-handling will have many counterparts. Purchasing department applications will be further cultivated. Adoption of eight channel punch tapes† will yield tape-contained checks on the accuracy of punching, control codes that will further speed printing and card punching, enhance the extent of data analysis and comparison.

The progress of IDP in "chemicals," however, may be most assured by the hook-in with "electronic brain" computers. These machines with their lightlike speed and vast data storage capacity will whip out a plethora of sales data. And, they will do it quickly—in time to be of real value to management. Regional trend comparisons, for example, could be done on a smaller-region basis than now feasible. Currently undeveloped forms of data analysis, too, are bound to arise.

† For the most part, this now awaits development of cheaper teletype transmittal when tape is used to wire data.

Providing an improved knowledge of sales position, this information alone will constitute a distinct competitive advantage for any firm having it. Better scheduling of sales calls and production could well be two results. Such intangible benefits may prove to be the main fillip to chemical industry IDP. And, as the size and complexity of the industry mushrooms, it's a safe bet that IDP will be needed more and more to push progress.

Thought Exchange

The opportunity to learn more about selling is one that can't be bypassed in current competitive markets.

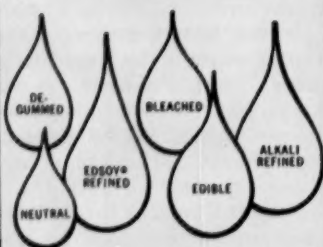
Such opportunity figures as a natural at the coming meeting of the National Industrial Conference Board, Sept. 21-23 in New York's Waldorf-Astoria Hotel. Although not oriented exclusively to the chemical man, the conference will feature many chemical industry speakers, cover sales management, sales research and the sales outlook. Some of the more significant discussions:

- Establishing a Basic Sales Policy—Joe E. Culpepper, vice-president, sales, Spencer Chemical Co.
- Marketing Research—Operation of Consumer Panels—Donald R. Longman, director of marketing research, Atlantic Refining Co.
- Getting the Best from Your Sales Leaders—H. A. Kimbriel, vice-president, marketing, Eli Lilly and Co.
- Measuring Adequacy of Market Coverage—John P. Duane director, market research, Interchemical Corp.
- How to Make Long-Range Sales Forecasts—Trend Projections: W. L. Leavitt, director, commercial research division, Standard Oil Co. (Ind.); Product Analysis: Frank M. Parker, marketing director, Chemical Division, Merck & Co.
- How to Use Motivation Research—A. R. Graustein, Jr., marketing research director, Lever Brothers Co.
- Providing Better Customer services at Lower Cost—Samuel Lenher, vice-president, Du Pont.
- The Ten-Year Sales Outlook for Chemicals—Lewis Lloyd, economist, Dow Chemical Co.

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Staley's, the pioneer of the soybean industry, uses solvent extraction methods... yielding oils that are *almost colorless*. Of the 6 different kinds of Staley's Soy Oil available, there is one suited to your specifications. A Staley Soy Division representative will be glad to furnish, on your request, complete information on Staley quality Soy Oils, and to recommend the one best suited to your needs.

For information about other quality Staley Industrial products, Soy Flours, Starches, Lecithin, Corn Syrup, Corn Steep Liquor, Amino Acids, etc., write:

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DECATUR,
ILLINOIS



DISTRIBUTION

For Your Reference: Refrigerant gas—manual contains numerous thermodynamic data in three saturation tables, 255 superheat tables, 10 pressure-enthalpy charts, and other graphs. Data is for "Freon 12." Du Pont (Wilmington, Del.).

- **Metallic soaps**—information provides representative analyses (based on statistical studies of production data) of stearates of magnesium, aluminum, calcium, and zinc and zinc palmitate. American Cyanamid Co. (New York).

- **Paper resins**—separate technical bulletins describe physical properties and suggest applications for two new polyelectrolyte resins, one carboxyl containing partial ester resin. Dept. SO, Monsanto Chemical Co. (Springfield, Mass.).

- **Amines**—52-p. technical booklet

provides list of company products, brief discussion of both newly discovered and well-known amine reactions, data on physical properties, and separate write-ups of applications in the rubber, agricultural, cellulose, surface active agent, pharmaceutical, corrosion inhibitor, petroleum, plastic, textile, and other fields. Information on storage, handling and toxicology is included. Sharples Chemicals Division, Pennsylvania Salt Mfg. Co. (Philadelphia).

- **Polyethylene**—profusely illustrated booklet shows applications of a polyethylene under adverse conditions, gives data on heat resistance, rigidity, chemical resistance, low-temperature toughness, tensile strength, and other characteristics. Koppers Co., Chemical Division (Pittsburgh).



Drugs Stall Northeast Epidemic

WHEN DISASTER strikes, it's a sure bet that chemical companies will be in the forefront with the rescue teams. Case in point: the present flood-ravaged Northeast, where possible disease epidemics now threaten.

Here pharmaceutical companies are pitching in to assist in the distressed areas.

For example: American Cyanamid's Lederle Laboratories is flying antibiotics, sulfa drugs and other medicines to state health commis-

sions for free distribution to stricken sections; Chas. Pfizer is trucking over \$50,000 worth of materials—free—into New England to replace damaged inventories of druggists; Olin Mathieson's Squibb Division plans a similar action; Sharp & Dohme Division of Merck & Co. has ordered typhoid vaccine stockpiled at its Philadelphia branch.

Companies are soft-pedaling the commercial aspects (publicity, extra sales), concentrating on rushing drugs to where they're needed.

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For detailed information and field performance data on the use of Davison Silica Gel for the drying of natural gas, write for Technical Bulletin No. 201.

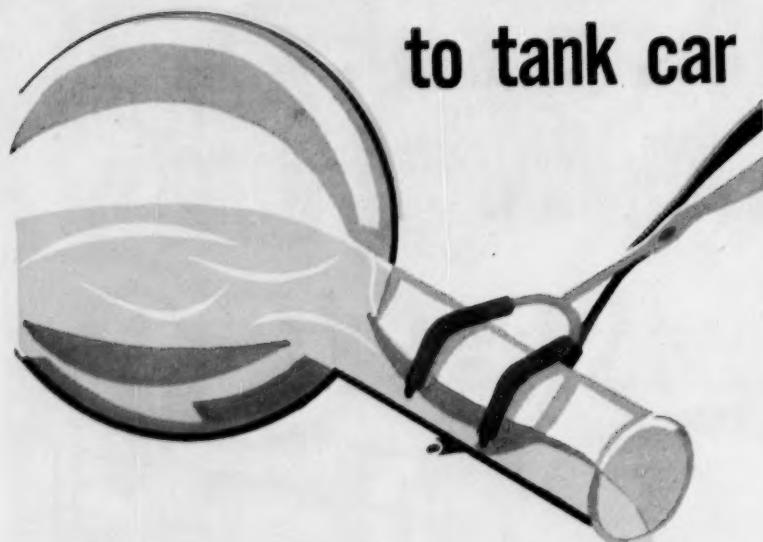
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DISTRIBUTION . . .

- Literature checklist—17-p. list of principal technical bulletins, reference manuals and handbooks, product folders and leaflets and others. Each piece of literature is briefly delineated. Diamond Alkali Co. (Cleveland).

- Organic chemical catalog—offers data on company chemicals produced in commercial or semiworks quantities. Product description and shipping information are given for each product. Antara Chemicals Division of General Aniline & Film Corp. (New York).

- Cyanuric chloride—44-p. technical brochure outlines chemical and physical properties, applications in 12 different fields, analytical procedures, and furnishes bibliography. Industrial Chemicals Division, American Cyanamid Co. (New York.)

- Polyacrylamide — bulletin describes hydrolysis, imidization and methylation of the material, gives physical properties, and suggests applications. No. 34, New Product Development Dept., American Cyanamid Co. (New York).

- Resorcinol resins—booklet furnishes separate bulletins for three resorcinol-phenol-formaldehyde types of resins. Information of uses, hardeners, storage life, formulations, mixing, and application of the resins is provided. Synvar Corp. (Wilmington, Del.).

- Phantolid—leaflet gives physical properties and details applications in the cosmetic field for luxury effects, blending, liaison between fragrance and skin, fixation, and presoftening. Polak's Frutal Works, Inc. (Middletown, N.Y.).

- Diphenyl disulfide — leaflet supplies resumé of physical properties, specifications, possible uses, and includes bibliography and price list. Evans Chemicals, Inc. (New York).

New Products: 12-Hydroxy stearic acid—especially designed for use in multipurpose lithium lubricating greases. Swift & Company, Industrial Oil Dept. (Hammond, Ind.).

- Aqueous modified polyacrylate solution—suggested for use in dispersions where maximum solids concentration at minimum stable viscosity is wanted. Tradename: Hycryl A-1000. Union Bay State Chemical Co., Inc. (Cambridge, Mass.).

- Amphoteric surface-active agents—new dicarboxylic analog (Miranol C2M Conc.) of coconut derivative is

proposed for use in cosmetic preparations and industrial cleaning formulations. Low irritation is claimed. Miranol Chemical Co., Inc. (Irvington, N.J.).

- Caffeine, free-flowing U.S.P. — new physical form has higher density, nondusting and free-flow properties. Chas. Pfizer & Co., Inc. (Brooklyn, N.Y.).

- Surface-active agents—three new nitroparaffin-derived cationic surface-active agents are being offered in commercial quantity. Differing somewhat in properties, the materials, Alkaterge A, E and C, are suggested for auxiliary emulsification agents, dispersing and spreading agents, corrosion inhibitors and other functions. Commercial Solvents Corp. (New York).

- Surface-conditioned sulfurs—specially treated sulfurs are claimed to offer free-flowing and blending properties as well as reduced dust- and static-induced fire hazard. Trademark: Tire-Brand. Stauffer Chemical Co. (New York).

- Vinyl plastics plasticizers — five new plasticizers, NL-F22 (semipolymeric phthalate ester type), NL-F32 (mixed alkyl adipate), NL-F33 (alkyl adipate ester complex), NL-A40 (didecyl phthalate), and NL-A50 (octyldecyl phthalate), now in production, are proposed for greater flexibility at low temperature needs. National Lead Co. (New York).

Expanding Sales Coverage: H. M. Royal (Los Angeles) has been selected sales representative by Argus Chemical Corp. (Brooklyn) for its line of plastics stabilizers and plasticizers in the California, Utah, and Oregon territory.

- National Drug Ltd. will locate a new warehouse and office building in Winnipeg, Man. To scale 250x150 ft., the building will cost over \$760,000, feature modern warehouse equipment and laboratory facilities for private labeling.

- General Mills' Chemical Division will open five new district sales offices: New York, Detroit, Kansas City, Pittsburgh and Chicago.

- Coal Chemical Sales Division of United States Steel will open Western sales headquarters in Salt Lake City.

- Brown-Allen Chemicals (Staten Island, N.Y.) has picked Matson-Wright Corp. (New Haven, Conn.) to handle all its export sales.

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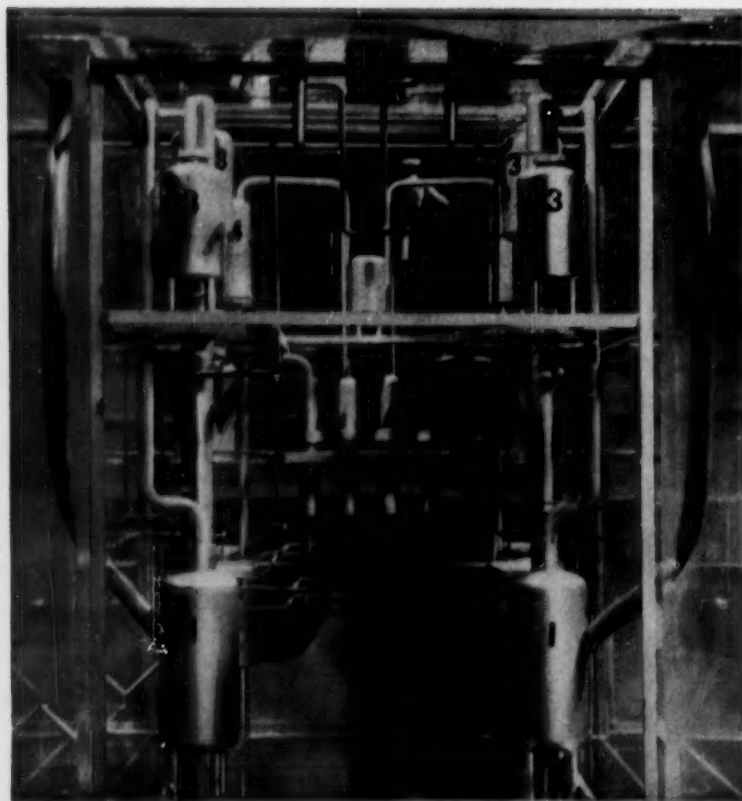
Although we are primarily concerned with converting limestone, salt, coal, and petroleum derivatives into basic chemicals of highest commercial purity, one of our major enterprises is helping customers use our products to the best advantage. ¶ To do this — and to keep apace of the ever-changing needs of industry — we maintain one of the most modern research centers in the business. We also have one of the finest technical-service departments in the business — staffed by skilled personnel with long experience in applications of Wyandotte's chemicals, and with a broad knowledge of the proper equipment for the correct handling of those chemicals. ¶ Whether you are a Wyandotte customer, or a prospective customer, our complete facilities are at your disposal. If you have a product or processing problem, send us as many details as possible. We'll be happy to

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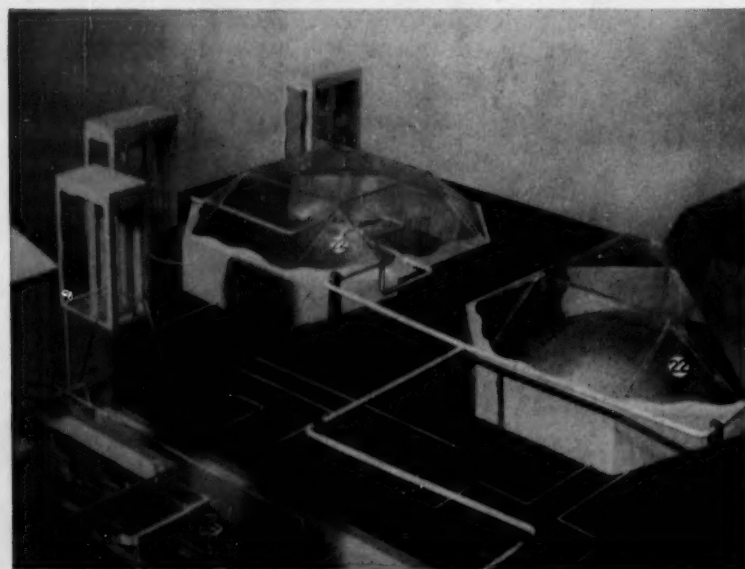


HEADQUARTERS FOR ALKALIES

Chemical Cleanup Pacifies the Atom



MODELS SHOW how Phillips removes unused uranium from fuel element, . . .



. . . concentrates the radioactive wastes and stores them underground.

Clearly a sign of the changing times was the amount of information released at the Geneva conference last fortnight on the reprocessing of fuel elements from an atomic reactor.

For instance, it was only slightly over two years ago that insiders were surprised when the Atomic Energy Commission approved a statement by its Lawrence Hafstad* (*CW*, June 20, '53, p. 74). Speaking before a group of aeronautical engineers, he said: "How would you like it, if instead of disassembling, your entire engine had to be dissolved in nitric acid, and the rebuilding of the engine started with getting a solution of certified chemically pure iron? That is the fuel processing problem."

Although the actual information disclosed was sketchy, it was an indication of the approach being used.

At Geneva, however, in contrast with such cryptic questions, scientists working on the problem went into some detail on the methods employed of separating the unused uranium and plutonium in a reactor.

Need for Economy: The fuel separation problem is one of the most staggering ever faced by a group of chemical engineers. In the ideal reactor, of course, all the fissionable material would be "burned up" and there'd be no need for recovery. But that possibility is strictly for the long-range.

At the present stage of technology only a portion of the fuel can be burned. The rest must be separated and recovered. Requirements of the separation process are simply that it must give high yields at low costs. Moreover, it should achieve this as quickly as possible to avoid a big buildup of inventory of fissionable materials. When you remember that all the material being handled is radioactive, you begin to get an idea of the dimensions of the problem.

There are several possible solutions of the separation problem. Stephen Lawroski (director of the Chemical Engineering Division of the Argonne National Laboratory) described four: precipitation, ion exchange, fractional

* Now director of General Motors Research staff.

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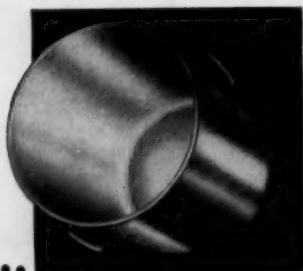


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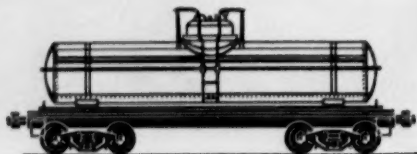
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PRODUCTION

distillation, and a pyrometallurgical separation.

But one of the most revealing talks on the subject was one given by D. G. Reid, CPP production supervisor, and R. B. Lemon, coordinations supervisor, Atomic Energy Division, Phillips Petroleum. They described the Phillips-operated Idaho Chemical Processing Plant. It employs a solvent extraction process of the separation. But the unique feature of the plant is that it's designed for direct, rather than remote, removal or repair of the process equipment.

In Three Steps: The actual operation takes place in three steps. First, the highly radioactive uranium-aluminum fuel elements are dissolved in nitric acid. Second, the solution is adjusted to make it amenable to the last step, which is a continuous liquid-liquid extraction. Methyl isobutyl ketone is the solvent that's used to separate the uranium from the aluminum, fission products and transuranic elements.

The uranium is concentrated and stored. Then, it's packaged, sampled, weighed, sealed and shipped for further treatment. The materials remaining after the uranium has been removed are the radioactive wastes. They're concentrated and jetted directly to a 300,000-gal. stainless steel tank for permanent storage. The tanks, in turn, are placed in a concrete vault and buried under 10 ft. of earth. Because of the fission product heat in some of these wastes, submerged stainless steel coils and a reflux condenser are employed to cool the tanks. Gaseous wastes from the process are filtered through fiberglass, diluted with air and discharged to the atmosphere through a 250-ft. stack.

The "direct" maintenance approach is made possible by a special wash with a chemical solution. Passed through the tanks and lines, it effectively decontaminates the equipment so that workers can handle it. In addition, spray nozzles in the process cells are used to facilitate external decontamination.

But by the same token, every effort was made to minimize maintenance. Critical equipment was installed in pairs so that the whole operation would not have to shut down because of a single failure. And equipment that might be expected to require a lot of maintenance was placed outside the cells in lead-shielded cubicles.

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CHEMICAL ENGINEERING is looking for a Ch.E. graduate with up to 3 years of experience, able to write clearly, logically. Personality-wise, he should be able to accept ideas from others ... work as a member of a closely knit team ... be eager ... unafraid of work ... inquisitive and open-minded, with plenty of personal drive.

Both magazines have headquarters in New York City, with McGraw-Hill, world's largest publisher of business papers and books. If you think you can meet the challenge of one of these editorial opportunities, send us details on your personal background, experience, approximate salary requirements, along with any evidence of your writing ability. All replies will be treated confidentially.



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Chemical Engineering*



*W. Alec Jordan, Editor
Chemical Week*

330 West 42nd Street, New York 36, New York

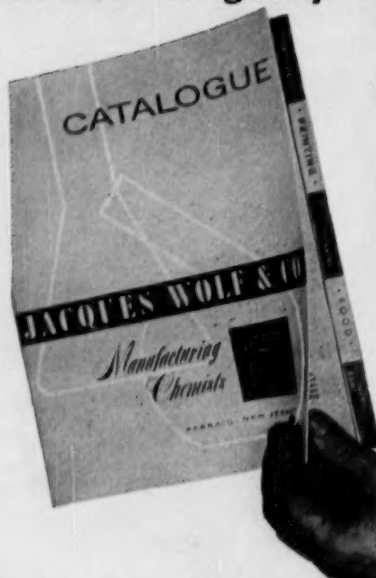
P.S. If more convenient, you may obtain additional information from these regional editors:

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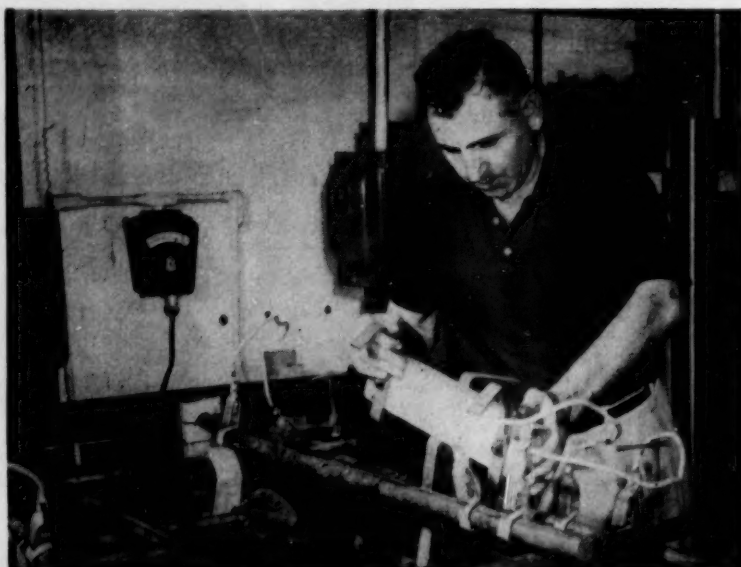
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PRODUCTION



TIARCO'S TOPELIAN sets up equipment to plate . . .

Tough Hide on Tough Metal

Though titanium performs like a real major leaguer in many industrial applications, it still strikes out occasionally when friction tosses a curve. But it may raise its batting average with the help of Tiarco Corp.'s (Clark, N. J.) Baylig process—claimed to be the first commercial method of depositing friction-resisting hard chrome directly on titanium.

The process was developed by Tiarco's Vice-President and Research Director Paul Topelian. A civil engineer by education, unorthodox chemist by choice, he has worked on selective plating and surface-hardening treatments for over 15 years. To him, hard chrome seemed a natural for extending titanium's many advantages to jobs where friction ruled it out.

But the metal just isn't amenable to common plating processes. Like other hard-to-plate metals, such as aluminum and magnesium, titanium oxidizes readily in air, spurns ordinary attempts to create a metal-to-metal bond. Topelian stubbornly played hunches that weren't in the book, came up with an economical solution.

Pretreatment Key: The secret of the Baylig process lies in the preparation of the metal surface. But Tiarco isn't disclosing the details of this vital step, except to say that it's a fairly simple, two-part operation: thorough mechanical removal of soil followed by im-

mersion in a special surface-activating bath.

The plating solution itself is tailored to titanium's unique requirements, is similar in other respects to conventional hard chrome baths. Deposits from 0.0015-0.003 in. thick provide the desired surface slip, withstand rigid adhesion tests, including the heat and mechanical shock of subsequent machining.

The only taker, to date, has been Buffalo Arms (Buffalo, N. Y., subsidiary of Frontier Industries, Inc.). In a test of Baylig-processed titanium pistons for weapons use, Buffalo Arms found that the chrome plate weathered the combined effects of corrosion and erosion better than did untreated parts.

Aluminum, too: In its Hardalume method, similar to the Baylig process, Tiarco employs a special pretreatment to permit the direct application of chrome on aluminum.

In this method, three baths are used: the first prevents oxidation of the cleaned aluminum surface by passivating the metal, excluding air; the second reactivates the metal as a bonding coat of chrome is applied; the third deposits hard chrome to the required thickness.

Conventional plating on aluminum requires successive deposits of zinc, copper and nickel before the chrome



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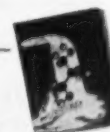
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PRODUCTION

can be applied. Hardalume, on the other hand, obviates multiple coating, reduces the number of galvanic couples. And what's more, says Topelian, it's more suitable for automatic operation.

One of the firms investigating possible applications reports that Hardalumed printing stamps, used in business machines, have outlasted stainless steel parts.

Future Plans: To make its Baylig and Hardalume processes available to equipment manufacturers, Tiarco will license job shops and plants on a royalty basis, train operating personnel, supply the plating chemicals, and act as consultant on future work. And if acceptance is as great as developer Topelian's enthusiasm, titanium and aluminum may find themselves cast in some new and unusual jobs.

EQUIPMENT

Tubular Filter: Industrial Filter & Pump Co. (Chicago) is out with a new line of tubular filters designed, it says, to provide simple operation, low maintenance for the smaller filtering jobs. With the new unit's unusual flow system, fluids move through the inside of the tubes, pass out the perforated walls through filter paper. Used liners can be easily removed and replaced by rolled sheets of filter paper. Standard 1-36-tube models provide 2.4-86.4 sq. ft. of filtration area.

Fiber Filter: Glas-Kleer fiber glass filter cartridges to fit standard filter containers are now available from Porous Plastic Filter Co. Inc. (Glen Cove, N. Y.). Chemical- and temperature-resistant superfine glass insures lint-free filtration with 2-, 10-, 25- and 50-micron-grade, throwaway cartridges.

Humidity Control: Dryomatic Corp.'s (Alexandria, Va.) T-150 dehumidifier maintains humidities as low as 10% in work spaces of up to 60,000 cu. ft. The machine has a dry air output of 150 cfm., features a motor-operated four-way valve, that automatically switches two silica gel drying columns alternately from drying to regenerating cycles. Thermostatic control of regeneration makes the T-150 self-adjusting to atmospheric conditions.

Centrifugal Separator: An enclosed feed system is the special feature of the new Westfalia Jet-O-Matic centrifugal separator now available from Centrico Inc. (Englewood, N. J.). Particularly adapted to liquid mixtures of high solids content, the unit is suitable for dewatering and dewatering tar, other chemical and pharmaceutical applications.

Not to Blame: After studying excessive algae growth along the shore of Green Bay near Oconto and Pensaukee (Wis.), a four-man board of scientists concluded that the state's pulp and paper mills were completely blame-free. The algae growth has been causing considerable odor and sludge problems.

Fishermen and resort owners had been attributing the trouble to wastes discharged to the stream by nearby pulp and paper mills.

The four-man board made a field investigation as well as laboratory tests. They found no evidence in the material of fibers from the mill. They also point out that mill wastes are made up strictly of carbohydrates, which are not utilized by algae. More apt to cause the trouble, they suggest, is nitrogen and phosphorus on which algae thrive and which "are generally derived from heavily fertilized farm fields and from sewage."

Gas Analyzers: Two new instruments for gases have made their debut, one for measuring dewpoint, the other for determining density:

- The dewpoint indicator is a portable one being introduced by General Electric (Schenectady, N. Y.). It uses the mirror method, is aimed for applications where only periodic checks of the dewpoint are required. It might find work, for example, monitoring the moisture content of furnace atmospheres.

- The gas densitometer, dubbed the Gas Density Balance, has been brought out by Arnold O. Beckman (South Pasadena, Calif.). It consists of a small dumbbell mounted on a horizontal quartz fiber. One ball of the dumbbell is punctured so that it will not be buoyant; the other rises and falls with a change in density of the gas. Thus, the dumbbell causes a rotational force around the fiber that is proportional to the density of the sample gas.

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Chemistry for the Fun of It

One third of all chemistry students in U.S. colleges credit their first interest to childhood chemistry sets, according to a survey taken by set maker A. C. Gilbert Co. (New Haven, Conn.).

What these and similar kits (microscopes, mineralogy, hydraulics) do to interest youngsters in science is so well recognized, the company says, that

several industries, looking toward future manpower needs, have asked Gilbert to turn out sets covering their particular fields.

If the educational toys work magic for the technological future, they are also profitable for the present. Gilbert, biggest learn-while-you-play outfit maker, last year had sales of \$15,-

614,664 with its line of toys (biggest money maker: Erector Sets) and small electric appliances. (Science toy competition is keenest among makers of chemical and microscope sets.) This Christmas a third line—Skil-Craft Corp.'s (Chicago) Handy Andy sets—will join the two old rivals, Porter Chemical Co.'s (Hagerstown, Md.)



HAND-FILLING: For chemicals low in volume or sticky in machines.



CABINETMAKING: Gilbert and Skil-Craft use metal; Porter uses wood.

Story begins on p. 59



SANTA'S WORKSHOP: Filling orders for next Christmas, these women put sets together on an assembly line.

Chemcraft, and the Gilbert Co.'s line.

Atomic Gimmicks: The new Skill-Craft series will mirror the typical price range (aimed to hit not only varying pocketbooks, but different age groups as well): \$3 (for 7- or 8-year-olds), \$5, \$8, \$10, \$15 or \$20 (for junior high school students). (Although Porter's Chemcraft line goes up to \$30, the most popular sets are those around \$10.) Differences are in the

number of chemicals included (from 8 to over 40),* the number of experiments possible (up to nearly 900 with the big Chemcraft), and special gimmicks added as the sets become costlier (example: atomic energy—a weak radioactive source and a spinthariscopes).

* Making up to 300,000 sets/year, Gilbert last year placed chemical orders varying from 2,800 lbs. (aluminum sulfate) to 10,000 lbs. (ferric ammonium sulfate).



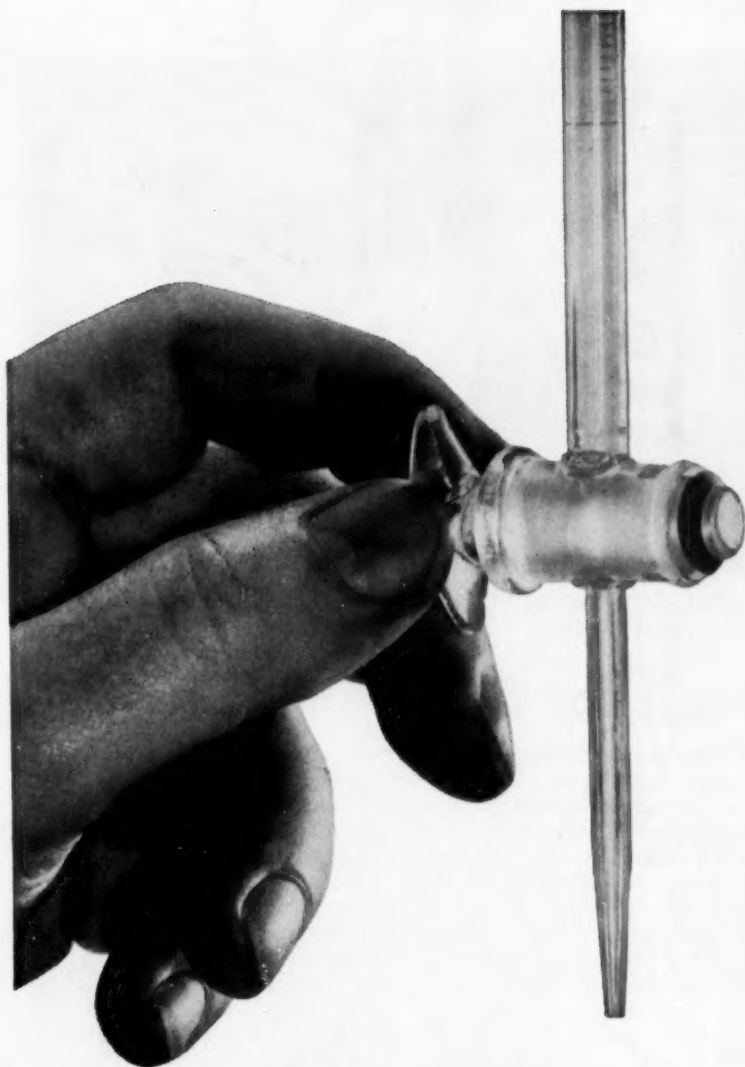
40 BOTTLES: Up to 10,000 lbs. of some chemicals are used in a year.



APPARATUS: Gimmicks like spinthariscopes and glass-blowing help sell sets.

40 Years Old: The first chemistry set was a Chemcraft, brought out in 1915 by Harold Porter. He was quickly followed in 1916 by Olympic pole-vault co-champion (1908) Alfred C. Gilbert, who was expanding from his 7-year-old magic set line and his 4-year-old Erectors.

Like the Fourth of July, chemistry sets have tamed down a lot over the years—and in much the same way. Says Gilbert's Paul Koch: "The glamour went out years ago when we had to stop putting in the stuff that makes the big bang." The pressure to "denature" the sets came after a long history of accidents, although most of



acetic acid

- Organic synthesis
- Reaction medium and solvent
- Dyeing assistant

acetic anhydride

- Acetylating agent
- Dehydrating agent in nitration and sulfonation reactions, etc.

propionic acid

- Organic synthesis

propionic anhydride

- Acetylating agent
- Intermediate

n-butyric acid

- For the preparation of butyric esters useful in formulating perfumes and flavorings.

n-butyric anhydride

- Acylating agent
- Intermediate

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SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; Houston—412 Main St.; St. Louis—Continental Bldg. **West Coast:** Wilson Meyer Co., San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Salt Lake City—73 S. Main St.; Seattle—821 Second Ave.

the mishaps occurred to boys who used chemicals not bought with sets.

Edible Labs: Safety is the big talking point now (since parents buy the sets) and talking safety louder than anybody is Skil-Craft. It's the only set bearing the promotable *Parents' Magazine* Seal of Approval. (Skil-Craft jettisoned one chemical, toxic in large quantities, at *Parents'* insistence). But Gilbert and Porter push safety, too (claims Porter: a child can eat anything in a Chemcraft set and, at the worst, get sick).

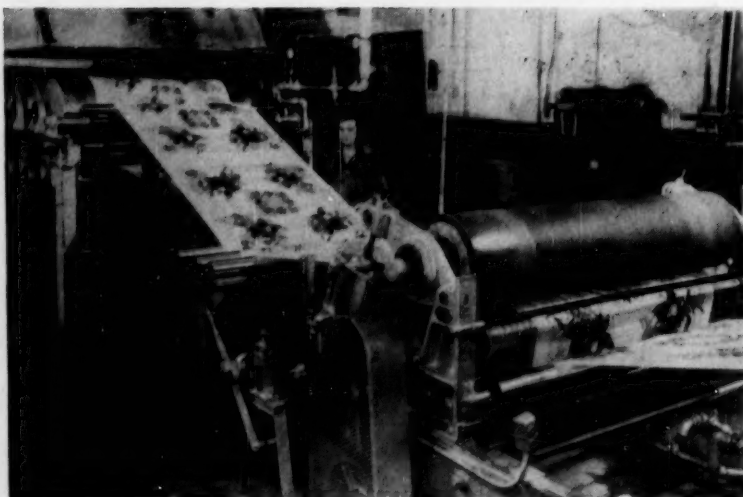
State and city laws have to be watched, too. California, for one, forbids including copper sulfate (Gilbert packs an empty bottle into sets destined there). Of course, product liability insurance is a must.

Violence Vs. Carbon Paper: On the other hand, as one set maker complains, "If it doesn't have a violent action or pyrotechnics connected with it, it doesn't seem to be too interesting to the kids." Getting the kids interested is the job of the manual writer, usually a college chemistry professor. He writes up a thousand or more experiments, trying to keep them educational,** yet interesting (generally with side trips, such as "Chemical Magic," "Glass-Blowing"), from which the company selects those that fit the sets they have in mind. Samples: how to make hydrogen sulfide; flame test for metals; how to make carbon paper.

As with all toys, the market for chemistry sets is seasonal; few are sold except at Christmas time. Heaviest promotion is in the Christmas catalog issued by department stores, and in group efforts like the Toy Guidance Group, which each year selects 104 toys (including Chemcraft) for promotion in general media ads.

What Is It? One promotion idea points out that boys are getting something out of the sets, even without the bang. Each year a prize is given to the Gilbert set owner who sends in the most interesting experiment not in the manual. Although many youngsters "just mix up everything in the set, send it to us, and ask us what it is," some follow novel paths. Last year's winner, for example, turned out a "rubber" from weeds. It's this type of youngster who picks up enough interest to go on into the labs.

** Chemcraft manuals include charts and Bryan Chemical Illustrators—cutouts with tabs to indicate valences which can be "assembled" to make compounds.



TEXTILE PADDING: THPC plus BAP equals best-yet flame-resistant treatment of cotton fabrics.

2-in-1 for Flameproofing

It takes two to flameproof—that's the latest word on treating cotton for flame resistance from the U.S. Dept. of Agriculture's Southern Regional Research Laboratory (New Orleans).

According to SRRL, which has been working in cooperation with the Army Quartermaster Corps. (Natick, Mass.), the fire-resistant quality can best be imparted by treating fabric with a combination of tetrakis (hydroxymethyl) phosphonium chloride (THPC) and bromoformallyl-phosphate (BAP), both important chemicals for flame resistance when used alone.

Inside and Out: The two chemicals make a particularly durable finish for cloth when applied together. The THPC, which was developed by SRRL a couple of years ago, reacts within the fiber, forms a flame-resistant, water-insoluble polymer there. Bromoformallyl-phosphate, a more recent development, is applied in water emulsion to cotton, where it provides a long-lasting coating on the outside of the fibers.

Both treatments, individually, give a durable finish. Fabrics so treated are flame- and glow-resistant, and don't differ greatly from nontreated materials in hand and appearance. The combination of two parts THPC and one part BAP, however, is much more effective than either one used alone, and resultant fabric will pass the most

stringent tests for flame resistance.

In the one-bath treatment, cloth is impregnated on a padder with a mixture, then dried and heat-cured. The chemicals add about 18% to the cloth weight, and the treatment is resistant to both laundering and dry-cleaning.

More testing of the process is being carried out. Complete data on the work done so far can be obtained from SRRL's Charles Fisher (2100 Robert E. Lee Boulevard, New Orleans 19, La.).

Air Cleaner: A new aerosol contains a spray room deodorant. Plasti-Kote Deodorant Air Conditioner, made by Plastic-Kote, Inc. (Cleveland, O.), contains an odor-absorbing ingredient, sells at \$1.49 for a 12-oz. can (an estimated 200 two-second sprays).

Do-It-Yourself Specialties: To give the now popular natural finish to interior woodwork, a new product—Trimlac—has been developed. William Zinsser & Co. (New York) says its finish brushes on, and makes a satiny surface similar to that achieved by hand-rubbing. An all-in-one-day operation, the first coat dries in 15 minutes; the second is applied after an hour; the third, three hours later. Coverage is up to 500 sq. ft./gal. No special thinners, primers or undercoaters are required, the company says.

• Winter weather and summer dust

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3. Accurate design to meet your specific needs.
4. Top-quality fabrication in General American's own shops.
5. Follow-up checks after installation to guarantee mechanical perfection and efficiency.



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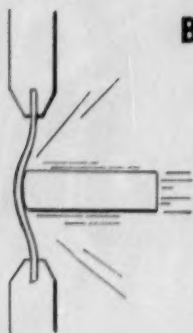
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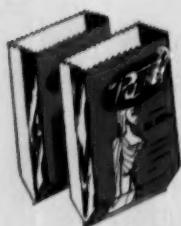


HOW ONE PACKAGING MAN SAVED TWICE HIS SALARY



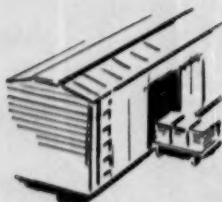
BY CUTTING BREAKAGE LOSSES

Reducing breakage is a T-P specialty. By specifying T-P Quality Shipping Sacks, this expert got extra strength without extra cost. Breakage losses were reduced to a minimum—production increased. (Large quantities of T-P Extra Strength papers are made into shipping containers by other manufacturers.)



BY DESIGNING FOR THE JOB

He found that T-P experts cut his costs by putting modern thinking into package redesign—both from production and appearance standpoints . . . that he received constant high quality reproduction. (T-P maintains complete design, plate and printing shops staffed by the industry's finest craftsmen.)



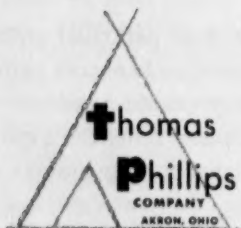
BY MAINTAINING STOCK CONTROL BALANCE

He found he had a full line to choose from—from 2 to 100 lbs. in every style and type—one to five walls. He could order as his operations required—mixed carloads to keep his stock control in balance. (T-P has a complete line with special liners—asphalt, polyethylene, clay coated, etc. to suit any need.)

BY SPECIFYING

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SPECIALTIES

can be kept out with home-owner-applied weatherstripping being offered by Kessler Products Co. (Youngstown, O.). Kits of B. F. Goodrich's (Cleveland, O.) Geon vinyl plastic are sold for aluminum or wooden windows, house doors and garage doors. The "Cushion Seal" weather strippings come in 20-ft. lengths for windows (at \$1.29 each), 8-ft. lengths for garage doors (at \$2.99) and 36-in. for door bottoms (at \$1).

Loaded Sponge: Now being test-marketed is a cellulose sponge pretreated with a cleaning chemical for rug- and furniture-cleaning. Made by Cellulose Fibers, Inc. (Toledo, O.), the sponge is sold by Chicago's Church Industries, Inc.

French Line: The Risdon Mfg. Co. (Naugatuck, Conn.) is licensing a French firm—Vertec, S.A. (subsidiary of Henri Desjonqueres, S.A.)—to make its complete line of aerosol dispensing valves. The valves will be marketed by another Desjonqueres subsidiary, Plasverre, S.A. (Paris).

Hothouse Paint: For greenhouses, a new protective coating, APCO Aluminum Neoprene Paint, is said to withstand severely hot climates and high humidity conditions. Product of Adhesive Products Corp. (New York), the paint is said to form a tough continuous film that remains flexible.

Tennis Elbows, Anyone? A new analgesic balm called Counterpain is being sold by E. R. Squibb & Sons (New York). Pains listed by company as being counteracted by the substance include: simple backache, discomforts of common colds, stiff neck, tired burning feet, Charley horse, and tennis elbows. Containing methyl salicylate, eugenol and menthol combined in a vanishing cream base, Counterpain sells at 69¢/1-oz. tube.

Two-in-One: For relief from minor rheumatic and arthritic-like pains in the joints, a new sodium-free tablet is being sold. Zarumin, product of Pharmaceuticals, Inc. (Newark, N.J.), uses the two doses in one principal (half the active material in the coating, the other half released two to three hours later). Three separate analgesic agents are contained: potassium salicylate, salicylamide, and acetophenetidin.

BASIC FOR CERAMICS AND GLASS

Stauffer Chemicals

Products ranging from enamel, porcelain, and glass for the home — to enameled signs and glass fiber insulation — are manufactured by Stauffer's Borate customers. No matter how fine the product, specifications of Stauffer Borates insure good results, yet volume purchasers know that they can regularly count on the same high quality.

Seventy years experience has earned for Stauffer a reputation as a dependable source. Thirty-eight plants throughout the country assure regular delivery of more than 50 basic chemicals used by basic industries.

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STAUFFER



CHEMICALS

AMMONIA PRODUCTION AT GRACE CHEMICAL

goes **"OVER THE TOP"**

with exclusive FW Sequence

Guaranteed
Capacity
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The above curve shows average monthly output of liquid anhydrous ammonia at the new Grace Chemical Company plant in Memphis, Tenn.

From "on stream" to full capacity production, on the basis of monthly averages, was achieved within 3½ months—a short period of time for a completely new plant. On a daily basis, full production was actually exceeded within 30 days from start-up. And the average monthly production, 90 days later, was well above the rated plant capacity.

This demonstrates the ease and rapidity with

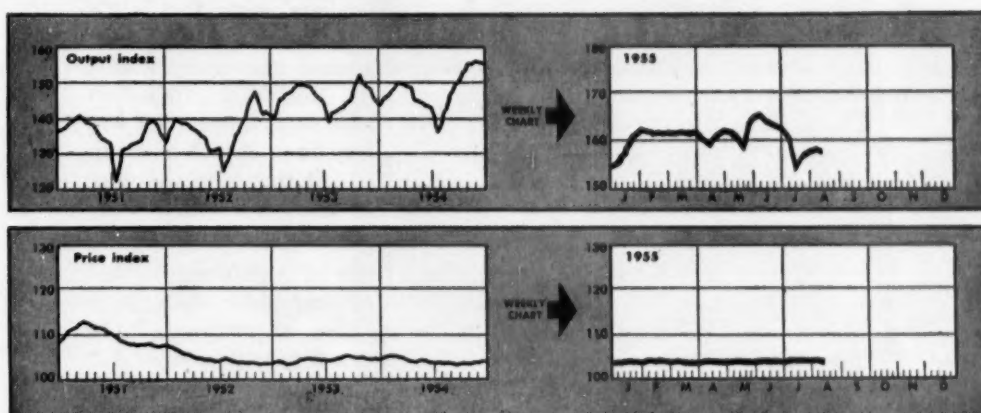
which the FW sequence for ammonia synthesis can be put on stream and raised to full production capacity, and proves the efficient functioning of all elements of the system—Texaco partial oxidation, FW liquid nitrogen wash and Casale ammonia synthesis.

For complete information on this Grace plant installation, send for the Mar.-April 1955 issue of "Heat Engineering." Foster Wheeler Corporation, 165 Broadway, New York 6, N. Y.

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MARKETS



WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	161.0	159.3	144.5
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.5	104.3	104.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	460.8	446.2	313.9

MONTHLY INDICATORS—Foreign Trade (Million Dollars)

	Latest Month	Exports Preceding Month	Year Ago	Latest Month	Imports Preceding Month	Year Ago
Chemicals, total	\$86.2	\$89.2	\$90.4	\$19.7	\$23.6	\$20.6
Coal-tar products	5.8	5.6	7.2	3.8	4.1	2.6
Industrial chemicals	13.2	13.1	14.0	6.4	6.7	5.2

MARKET LETTER

It's apparent this week that a strong, postsummer price-changing wind is blowing through the marketplace. Higher schedules, effective Oct. 1, have been—and are being—posted on several items.

Caustic soda and soda ash, among the heavy chemicals, are being revised upward; the latter for the first time since the spring of '53. Allied Chemical's Solvay Division kicked off with hikes on both light and dense ash. Its new 10¢/cwt.-higher prices: 58% light ash (bulk, c.l.), \$1.45/cwt.; 58% dense, same basis, \$1.50.

Soda ash demand, of late, has been fairly firm; actually some areas are experiencing a definite tightness because of stepped-up calls from glass, paper, and other consuming industries. And adding pressure to the market, of course, is the weeks-long strike at Columbia-Southern's plants.

Same situation prevails on caustic. Dow Chemical, late last week, hiked schedules on both liquid and dry forms. Although other producers haven't yet followed suit, it's almost certain that all caustic customers will be paying, come the first of October, an additional 10¢/cwt. for their liquid caustic, and 25¢/cwt. for dry.

The higher prices—\$2.80/cwt. on the 50% solution, \$2.90 on the 73%; and \$4.25, c.l., for flake, \$4.10, c.l., for solid. Most frequently heard reason: higher labor and production costs.

MARKET LETTER

Don't be surprised at a similar turn of events in the chlorine market. Although strike settlements may affect makers' costs, fact is it's been a long time since chlorine movement has been as bustling as it is now.

Demand has been exceptionally well sustained over many weeks, and there's very little letup yet, report producers. Note that production of chlorine during the first four months of this year totaled some 998,000 tons (compared with '54's 900,000), and with May-June output adds up to nearly 1.6 million tons for the first half of '55. At that rate the year will check out at about 3.2 million—well above last year's 2.9 million tons.

Pounds, not tons, measure the quantities of high-purity zirconium and hafnium metal on the Atomic Energy Commission's shopping list. Tentative AEC plans provide for "solicitation of proposals" for delivery of 2 million lbs. of zirconium metal over a 5-year period, or 1.2 million over a 3-year period.

Proposals should also cover delivery of as much hafnium as can be produced from the zirconium to be processed. Preliminary schedules and additional information are available from the Pittsburgh Area Office, U. S. Atomic Energy Commission, P. O. 1105, Pittsburgh, Pa.

Some chromium chemical buyers are paying more for their needs. Higher spot prices immediately, and Oct. 1 for contracts, are being posted on chromic acid, basic chromium sulfate, sodium, and potassium bichromate. The latter is up \$1.50/cwt. to a level of \$16.50. Sodium bichromate is advanced 75¢ cwt. to \$12.25 c.l. or truckload, works.

The other changes: chromic acid, up a dollar, to 28.50/cwt., in drums; and basic chromium sulfate increased, by 50¢/cwt., to set a new \$10.50/cwt. price.

Copper and its compounds continue on an upward spiral. At the moment the metal is pegged, by at least two producers, at 43¢/lb. That's an additional 3¢/lb. hike over last week's 4¢ increase. And if some trade talk materializes, once-though-fantastic 50¢/lb. copper may actually be in the offing.

Among the derivatives, copper cyanide advanced 4¢/lb. on the heels of the latest metal advance. New quotes, effective immediately, range from 77-80¢/lb., depending on quantity purchased.

Customers of Carbide and Carbon's Whiting, Ind., plant aren't too greatly affected by the Standard Oil fire. Carbide tells CW some raw material gas from Standard was lost, but the loss has been made up from other sources. Output (acetic anhydride, acetone, ethylene oxide, glycols, etc.) is moving uninterruptedly.

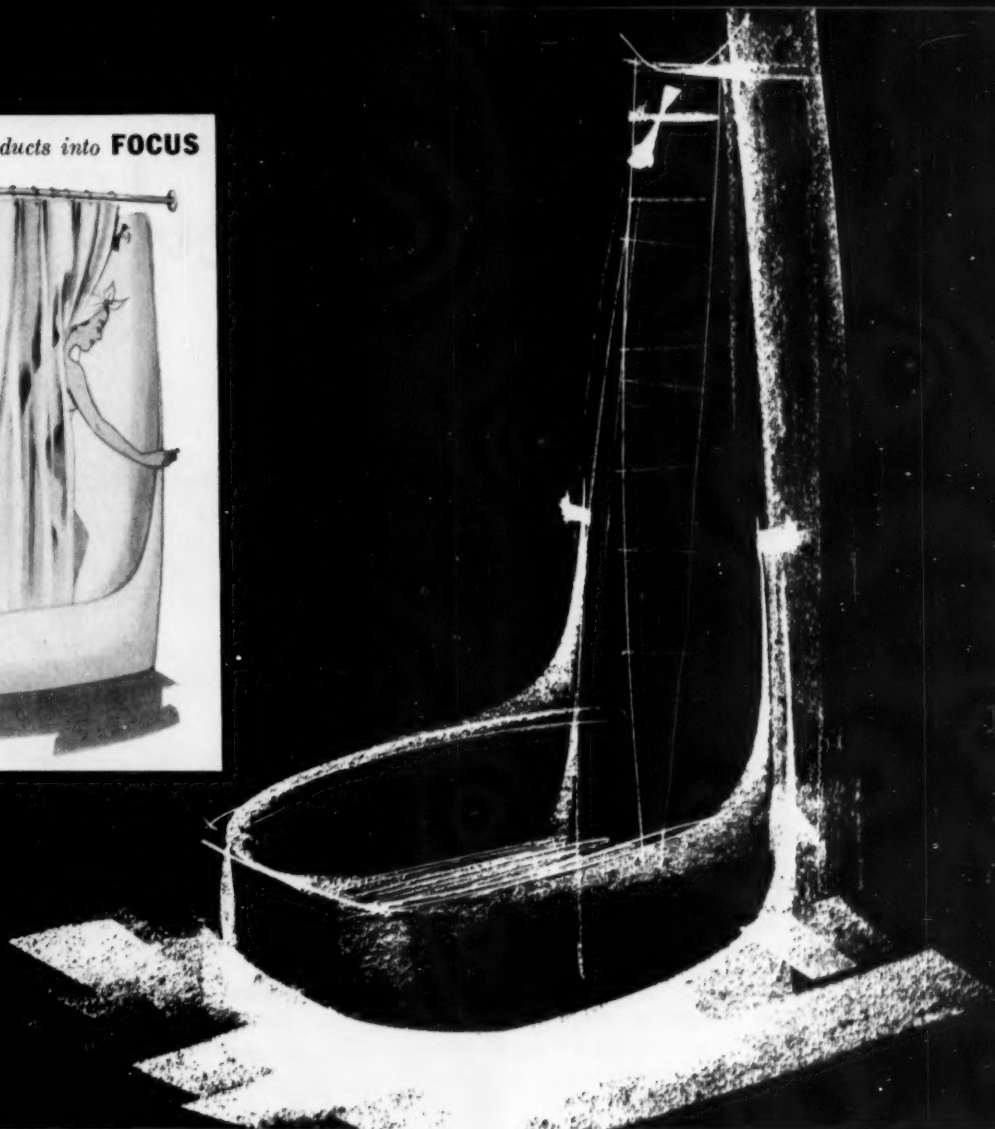
SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending August 29, 1955

UP

	Change	New Price		Change	New Price
Ammonium bromide, NF, gran., bbls.	\$.01	\$.40	Potassium bromide, USP, gran., bbls., kgs.	\$.01	\$.36
Copper cyanide, tech., bbls., 1,000-lb. lots or more	.04	.78	Sodium bromide, USP, bbls., works	.01	.36
Lithium bromide, NF, dms., works.			Soda ash, dense, 50%, bulk, c.l., works, 100 lbs.	.10	1.50
frt. equald.	.14	2.30	Soda, caustic, liq., 50%, sellers, tanks, works, dry basis, 100 lbs.	.10	2.80

All prices per pound unless quantity is stated.

Bringing new products into **FOCUS**



Could a low-cost shower-tub find a market in millions of homes and summer cottages?

MANUFACTURE OF SUCH A UNIT IS POSSIBLE WITH REINFORCED PLASTIC!

With the number of home-dwelling Americans increasing every year, the need for additional bathing facilities is becoming increasingly acute.

It seems likely that a tub and shower that is low in cost and easy to install could help solve the problem. It could create an auxiliary unit for home basements or attics. It could improve the conveniences of millions of summer cottages.

The ideal material for such a combination tub and shower is at hand. By using fibrous glass, bonded with polyester resins, the unit could be easily molded in one piece.

It would be light in weight, smooth in finish, compact in design and colorful in appearance. The water could be brought up to the shower head through pipes

which also serve as structural members.

The uses of reinforced plastic materials are growing every year. They are already widely applied to sports car bodies, boats, corrugated building panels, modern furniture, air conditioning ducts.

The basic ingredients for manufacturing polyester resins are supplied by Monsanto. These include Monsanto *styrene monomer* and *phthalic* and *maleic anhydrides*.

If you would like a glimpse of other possible new uses for reinforced plastics, you are invited to request "A Sketchbook of Profitable Products." Write on your letterhead to Monsanto Chemical Company, Plastics Division, Dept. C-10, Springfield 2, Mass.



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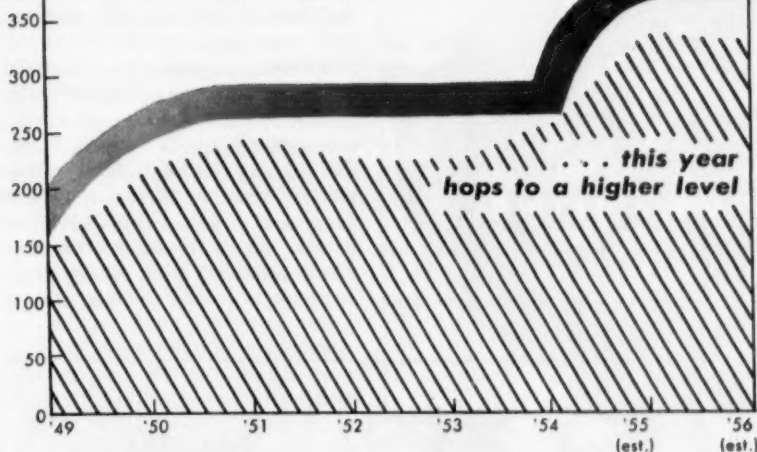
Los Angeles and Alameda, Calif. • Port Arthur, Texas • Chicago, Ill. • New Orleans, La. • Sharon, Pa. • Camden, N. J.



UNITED STATES STEEL

U. S. Phthalic Anhydride Production . . .

(million lbs.)



How High the Step?

Six months ago most marketers would have given attractive odds that the racing demand then for phthalic anhydride was due for a slowdown. And further, that the skid would occur within weeks. But it didn't. And surprisingly, the phthalic market still leans decidedly toward the tight side.

Next year, though, the climbing curve of phthalic disappearance could flatten out dramatically, and according to one trade follower, even show signs of declining for a spell.

This would, in essence, parallel the plasticizer raw material's anticipated production pattern (see chart), but would show no resemblance to up-tracking capacity.

By the end of '56, for instance, comparatively new installations in place, now starting up, and definitely planned, will boost U.S. phthalic anhydride potential to nearly 400 million lbs./year. That's more than double the 190-million pre-Korea rate, and an imposing jump over the rated capacity (275 million) of two years ago.

Not yet officially confirmed, but soon to be, is word that Pittsburgh Coke & Chemical will move up in the phthalic hierarchy, spend some \$3 million on a capacity-doubling of its Neville Island, Pa., plant. The increase will make Pittsburgh the fourth largest producer. Target turnout: 30-

35 million lbs./year sometime in '56.

And just last week, American Cyanamid revealed (*CW Market Letter*, Aug. 27) that production has finally started at its delay-ridden Bridgeville, Pa., installation. When operations move into high gear, the plant will make some 50 million lbs./year, rate American Cy as the country's third largest.

Allied Chemical & Dye's Barrett Division, however, clinched its claim as the "world's largest producer of phthalic anhydride" when it turned valves at a fourth (35 million lb.) plant this March. With two phthalic sites at Philadelphia, one at Ironton, O., and another at Chicago, Ill., Barrett can now pour out about 140 million lbs./year.

A few months earlier Monsanto came in with an expansion that lifted total capacity from two plants (St. Louis, Mo.; Everett, Mass.) to an impressive 70-80 million lbs.

Add phthalic potential of other producers—National Aniline, Oronite, Koppers, Reichhold, Sherwin-Williams—and the tally of U.S. capacity right now comes to about 375 million lbs./year.

Actual production of phthalic has seldom matched productive capacity in the U.S., though at times the gap has been extremely narrow. Such a situation could prevail this year. Based on the highest output month to date (March), total production could hit some 360 million lbs.—scarcely 15 million shy of capacity—by the end of '55.

For a spate of reasons, including anticipated production of phthalic end-uses (automobiles, appliances, polyester panels, etc.), and more importantly, the market status of phthalic raw material naphthalene, production will likely tote closer to 340 million lbs.

Question: Where To? Most producers are little concerned, at the moment, over surging phthalic output; practically every pound being made is sold—in many instances, weeks in advance. Reason, of course, is that the chief phthalic consumers are bouncing along at a brisk pace.

Alkyd resin production, for example, which takes some 60% of the phthalic consumed, is running a good 10% above last year's rate. Output may well snuggle close to '53's mark of 419 million lbs. Of this amount perhaps 385 million will be phthalic anhydride types.

Second largest phthalic outlet, via plasticizers, is the vinyl industry (*CW*, July 3, '54, p. 54). About 58% of all

PHTHALIC ANHYDRIDE (million lbs.)

	U.S. Output	Imports	Exports
1949	149.7	2.3	2.2
1950	216.2	1.4	2.8
1951	248.0	.2	9.2
1952	228.6	.2	3.9
1953	226.6	18.5	.6
1954	256.3	.7	11.3
1955 (est.)	340.0	.6	15.0



Get the longest life possible at no increased cost with Di-iso Decyl Phthalate Plasticizer

Di-iso Decyl Phthalate is the most permanent phthalate plasticizer commercially available.

This recently developed phthalate plasticizer makes it possible for you to substantially increase the life of your vinyl products . . . at a volume cost less than that of Dioctyl Phthalate. In severe aging tests (120 hours @ 121° C. and 96 hours @ 136° C.) the results for Di-iso Decyl Phthalate indicated only about one-half the loss of flexibility of plastics containing Dioctyl Phthalate.

Di-iso Decyl Phthalate is a primary plasticizer for most resins. It is recommended for any composition where it is desired to have the all-around good properties of Dioctyl Phthalate with longer lasting flexibility.



Technical literature and samples will be sent immediately upon request without obligation.

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OHIO APEX DIVISION
Ferro-Metallurgical Chemicals Corporation
NITRO, WEST VIRGINIA

DEPT. 28

- ☐ Send technical literature.
☐ Send samples of Di-iso Decyl Phthalate Plasticizer

NAME

COMPANY

ADDRESS

CITY

STATE

MARKETS

plasticizers made in the U.S. are esters of phthalic anhydride; and approximately 70% of the plasticizer output is used to impart flexibility to vinyls for sheet, film, coated fabrics, floor coverings, and a long list of others.

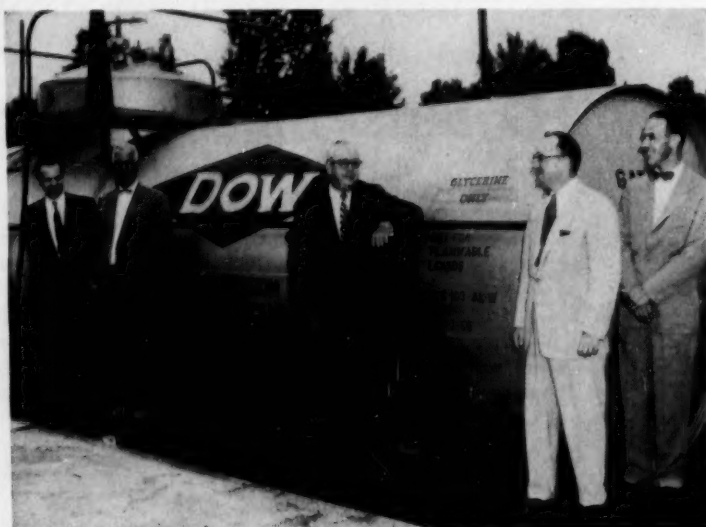
Production of vinyl and vinyl copolymer resins last year totaled nearly 517 million lbs. Output, as of the first quarter of this year, is about 30% higher than during the same period in '54.

Even the lesser users (e.g., dyes, drugs, textile chemicals, rubber retarders) are taking more phthalic this year.

But despite the bustling, evident

among phthalic customers, fact is consumption of the material is currently running at a relatively low 300-320 million. That's considerably under the near-future capacity to produce phthalic, and at least 20 or 30 million lbs. short of '55's estimated production level (see table).

Inventory Impact: Seldom discussed, but of import to the market, is "disappearing" phthalic—the apparently unaccounted-for spread between output and consumption. Actually, there's no mystery about it; the answer lies in customers' inventories. In periods of phthalic plenty, consumers are satisfied to work with stock enough to last 30 days or so. At the first hint of



Glycerine Rides Out—and Up

BY THIS WEEK, U.S. synthetic glycerine availability has been increased significantly. Output from Dow Chemical's long-heralded Freeport, Tex., plant will add some 36 million lbs./year to that of pioneer producer Shell Chemical's 60 million. And there's more synthetic coming.

The latter firm plans to up its capacity to some 80 million lbs./year. Together, these facilities should do much to eliminate glycerine's hitherto-wide swings between scarcity and periods of overly plentiful supply. Price fluctuations,

too, may well be a thing of the past.

Shown above is the first tank car of glycerine out of Dow as it was delivered to the Schenectady Varnish Co. plant in Schenectady, N.Y. It will be used in synthetic resin production.

On hand for the transfer from producer to consumer: (left to right) James Day, Dow's manager of sales; Schenectady Varnish's Executive Vice-President H. D. Wright; Dow Chemical's Leo Grant and E. L. Martinez; G. B. Tod, secretary of Schenectady Varnish.

tightness, however, most users—and there are hundreds in the U.S.—immediately strive to build 60- and, in some cases, 90-day inventories to assure uninterrupted production. That's happening now.

When—and it may be within a matter of months—customers begin easing up on orders, start dipping into their own inventories, phthalic production will of necessity have to level out again. And every indication points to 1956 as the year phthalic anhydride will begin to move onto another plateau.

Export-Import Offset: In times of slackened domestic demand, phthalic marketers have often looked abroad for succor. And, conversely, supply here has many times been augmented by imported material. Indicative of the pendulum-extremes: if the current pace of shipments is maintained, the '55 total of overseas-headed phthalic will amount to about 15 million lbs.; just two years ago some 18.5 million was imported (*see table*).

The influx in '53 stirred much interest among market observers, since the quantity towered so over the previous year's insignificant 0.2 million lbs. U.S. phthalic makers, though, were unruffled. Bulk of the material was brought in from Italy, and used chiefly by only one company in this country.

With foreign phthalic capacity on the increase, the convenient export outlet may soon peter out. As recently as 1953, offshore phthalic plants (excluding those in Iron Curtain countries), were able to turn out about 200 million lbs./year; today, capacity standing, building and planned will total some 350 million.

And markets for U.S. material could be cut off abruptly by duty barriers. An example: duties in the United Kingdom are currently relaxed (to 10%), to allow phthalic importation. They can and will, many believe, be raised overnight to the old 33% rate, as soon as large, under-construction phthalic facilities there are completed.

But right now, with domestic demand barreling along, it seems incongruous that as much as 15 million lbs. should be slated for delivery abroad. The reason, explains a major producer, is that some shipments going out now represent commitments made during '54. (About midyear, the ex-

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MARKETS

port-import picture reversed itself when consumption needs in this country dropped.)

Buffeted Outlook: Aside from the improbability that phthalic use in the U.S. will put any strain on next year's jacked-up capacity, and that producers may not have an easy time selling what they do make (because of large consumer-held stocks and export problems), phthalic demand could be subjected to another blow—competition.

Maleic anhydride, for one, continues to pitch for a share of the alkyd market; consumption by the latter this year may be as high as 14-15 million lbs. Admittedly, that's only a nibble compared with phthalic's near-150 million lbs. used in alkyds, but well-promoted maleic characteristics (e.g., better impact-resistance properties) could lure more customers.

Then, too, maleic anhydride's take invariably increases, despite its higher cost, when phthalic availability is pinched.

The phthalic use-curve could also be held down somewhat by fast-growing, newer films other than vinyls, as well as by competition from terephthalic and isophthalic acids.

Oronite's new isophthalic plant at Richmond, Calif., will be in operation next month, and although full production won't be reached immediately, by next year IPA will be actively bucking phthalic for a piece of both the plasticizer and the surface coating markets. And Oronite is touting IPA for some applications said to be "beyond the scope" of the older product.

Summing up phthalic anhydride's outlook, it would appear that today's tight supply/demand situation will, in a year or so, do a complete somersault.

But present, new, and potential producers can take heart from a prediction in the authoritative Paley Commission Report: a scant two decades from now, phthalic consumption in alkyd resins will total about 1,201 million lbs.; in phthalate esters, some 831 million; and in dyes, drugs, food and miscellaneous outlets, an additional 160 million lbs.

To satisfy these demands, production will have to stretch to 2 billion lbs./year—more than six times the estimated output for this year. It's an enticing—if far off—vision.

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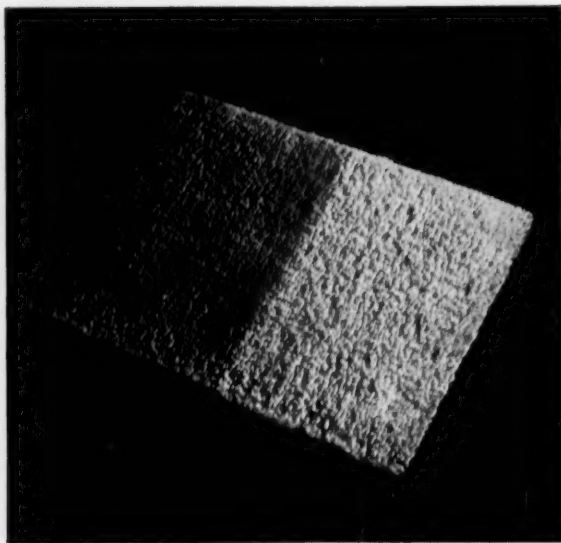
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Life ... on the Chemical Newsfront



BLUETONGUE, A NEW DISEASE IN SHEEP first recognized in the U.S. a few years ago, now is spreading widely. Bluetongue may kill one out of five sheep infected, and severely set back the others. This virus disease has not been treated successfully but may be prevented with **LEDERLE BLUETONGUE VACCINE** developed by Cyanamid's Lederle Laboratories Division. Vaccination should be completed a full month before Bluetongue season arrives. Your veterinarian can give firsthand information. Our literature on Bluetongue disease and vaccine is available. (Lederle Laboratories Division)



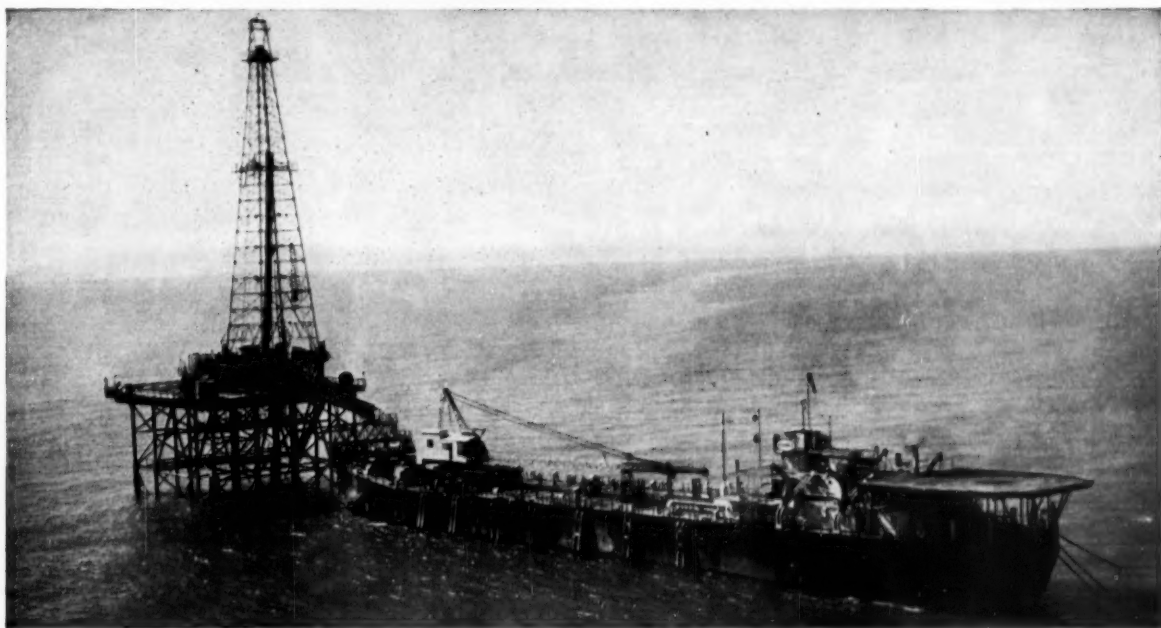
RUGS COLLECT LESS DIRT, are cleaned more easily when treated with **CYANA® Soil Retardant**. Illustration shows striking contrast between treated and untreated sections of same rug exposed to identical soiling conditions. **CYANA Soil Retardant** acts by filling the roughnesses on the fibers with an almost invisible protective surface. This prevents soil from clinging and makes it easier to remove dirt. This new improved compound should be particularly valuable for treatment of non-wool rugs, which are increasing in popularity but tend to soil more readily than wool. (Textile Resins Department)



PUT PLANT REFUSE TO WORK. Corn stalks and roots were decomposed almost completely from Fall to Spring to form soil humus when plowed under with **AERO® Cyanamid Granular** (left photo) but remained firm and woody without this nitrogen- and lime-containing chemical (right photo). Illustrations also show improved condition of the soil due to humus formation with **AERO Cyanamid**. The high nitrogen content of **AERO Cyanamid** not



only feeds the bacteria, which hastens decomposition, but also assures ample supply of this important plant nutrient for growing crops. **AERO Cyanamid's** lime content helps prevent soil acidity. For years **AERO Cyanamid** has improved soil and increased crop yields for farmers, and now is available as **LAWN AND GARDEN Cyanamid** to speed production of humus for home gardeners. (Agricultural Chemicals Division)



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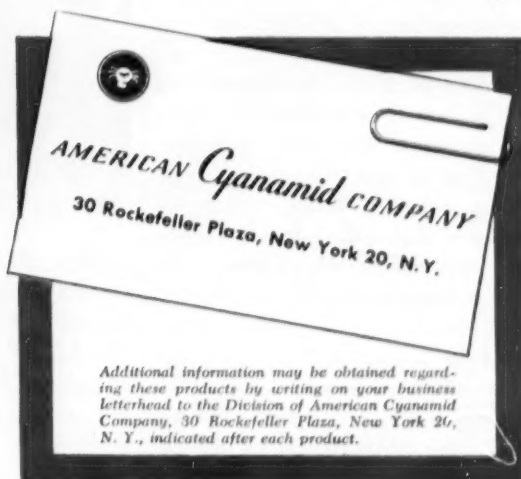
high as 350° F even in the presence of considerable amounts of contaminants. CYPAN Drilling Mud Conditioner is a high molecular weight, water-soluble acrylic polymer which does not require preservative treatment to prevent fermentation. (Industrial Chemicals Division) ^{*Trade-mark}



NEW VAPOR PHASE CHROMATOGRAPHY apparatus, developed in Cyanamid's Stamford Laboratories, automatically separates and identifies volatile organic liquids. Mixed vapors are separated in a partition column, and analysis is read directly on chart. Apparatus may be employed on stream or in research projects. Used at Stamford in research on new catalysts for petroleum refining, it permits rapid evaluation of catalyst efficiency. Cyanamid's extensive series of AEROCAT® Catalysts has reduced cost and increased efficiency in fluid catalytic cracking operations through development of catalysts with optimum particle shape, high pore volume, and extreme stability. (Industrial Chemicals Div.)

NEW WATER-SOLUBLE POLYMER, which forms water-insoluble films and coatings when air-dried or heat-cured, offers intriguing possibilities to paper, textile, adhesive and other manufacturers. The new polymer is methylolated polyacrylamide and may be made by treating aqueous solutions of polyacrylamide with formaldehyde using basic catalysts. Variation in properties may be obtained by changing processing conditions and by use of polyacrylamide of different molecular weights. Dried films of methylolated polyacrylamide are clear and hard, insoluble in boiling water, and may be softened somewhat by water immersion. Dilute solutions of the new polymer are stable for at least six months at pH 6-7. Samples of polyacrylamide and directions for methylolation are available on request. (New Product Development Department)

C.W.



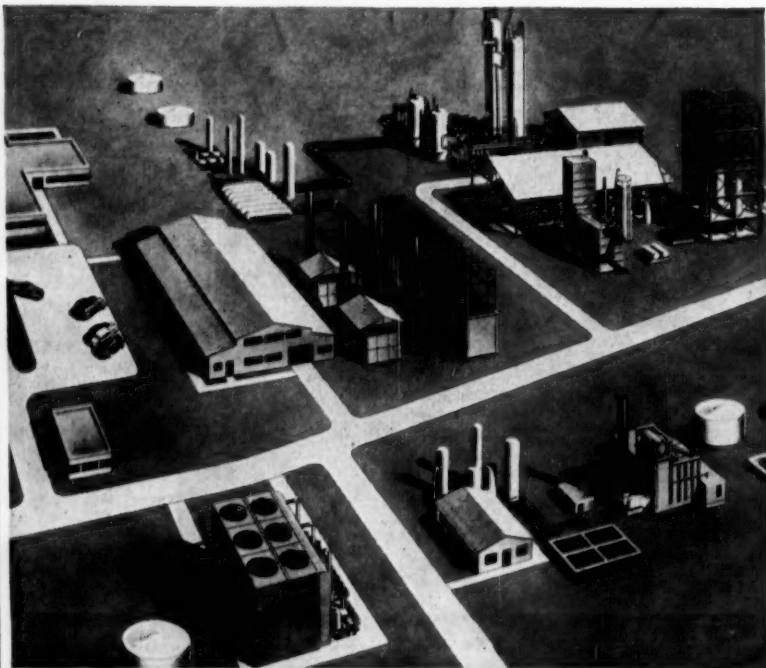
First Complete Ammonia Products Plant Planned For Puerto Rico

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Construction will begin shortly on a new anhydrous ammonia, sulfuric acid and ammonium sulfate plant at Guanica, Puerto Rico for Gonzalez Chemical Industries, Inc., San Juan. With the creation of this industry, the second largest new endeavor on the island, another milestone is passed in the Puerto Rican Government's industrialization program.

The plant will provide a dependable source of ammonia-nitrogen and related products for fertilizer and industry of the island. This is of particular importance in times of international emergency when shortages may seriously handicap growers of sugar cane, tobacco, coffee and other industrial chemical developments.

Forty-two thousand tons of anhydrous ammonia will be produced per year. Part will be sold as such, and the balance will be converted to aqueous ammonia, sulfuric acid, ammonium sulfate and possibly other materials for use by agriculture and industry.



Artist's conception of complete ammonia products plant for Gonzalez Chemical Industries, Inc., Guanica, Puerto Rico.

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Building Better Phosphates

Tightened insecticide regulations are spurring research for pesticides that are less hazardous to humans and animals.

Much of this effort is being directed to preparing new phosphorous compounds, screening and field-testing them for effectiveness and safety.

Several new ones are emerging from this work, may be bidding for pesticide jobs in the not-too-distant future.

Under newly effective Public Law 518,* insecticide research is quickening its pace. A criterion for insecticide safety, the statute is also open encouragement to find the profit that lies in pest controls that are more efficient, lower in risk.

While all insecticides are covered by the law, organic phosphates have a particular incentive to better their safety standards. The outgrowth of wartime nerve gas research (by Gerhard Schrader at the Elberfeld laboratories of I. G. Farbenindustrie), phosphates can be lethal to insects and mammals alike.

To date, for example, only one such phosphorous compound, malathion (O,O-dimethyl dithiophosphate of diethyl mercaptosuccinate), has been adjudged by the Dept. of Agriculture as safe enough for dairy barn use—while several nonphosphorous compounds (e.g., methoxychlor) have attained this rating. But even the best phosphates are somewhat toxic.

Extensive field-testing and a rash of patents attest to the already-feverish activity of phosphate researchers bent on securing the unique toxicant properties of these compounds (kills are high†, insects apparently do not develop immunity) while divesting them of their poisonous effect on warm-blooded animals. In general, the phosphates are powerful inhibitors of cholinesterase, an enzyme found in nerve tissue. Cholinesterase is necessary to hydrolyze acetylcholine—a nerve impulse mediator. The effect of phos-



DOW'S TOLKMITH: For better insecticides, a forte in phosphates.

phates on humans is now thought to be a form of acetylcholine intoxication.

One outstanding researcher, Henry Tolkmith—of Dow's E. C. Britton Research Laboratory in Midland—has been the recipient of 44 organic phosphate patents in the past 7 years. Last year, Tolkmith set what is probably a record in the field by receiving 29 of these in one day. These included patent 2,668,818 [S-(ethylxanthoyl) methanethiolphosphonic chloride] through 2,668,846 concerning O-(4-nitrophenyl) alkanephosphonic chlorides. More recently, Tolkmith earned patent 2,693,483 on propynyl phosphate compounds.

Both Tolkmith and Britton Laboratory director, Ralph Perkin, feel that phosphorous compounds show particular promise as fly killers. Moreover, Dow admits that a number of its new compounds are relatively nontoxic to mammals and are being tested further. None of these, however, is on the verge of becoming commercial.

More than an inkling of the scope of phosphate toxicant research is evident from patents granted within the past year. These firms are among those prominent in the field:

- Esso Research and Engineering Co. (Linden, N.J.) was assigned patent 2,705,694 covering diethyl thio-phosphoric acid disulfide as an insecticide.

- Shell Development Co. (Emeryville, Calif.), which, after two years, is still actively field testing its phosphorous-containing SD 2406, has received patents 2,706,194 (esters of phosphoric acids) and 2,711,403 (esters of aromatic phosphinic acids). Earlier it was granted 2,685,552 on dimethyl 1-carbomethoxy-1-propen-2-yl phosphate insecticide.

- Parathion (O,O-diethyl O-p-nitrophenyl thiophosphate) and dimethyl parathion marketer, Monsanto, tells *CW* its research on phosphate pest killers is continuing. Sample effort: patents 2,703,813-14 on organic phosphorous compounds.

- Pioneer researcher Schrader continues active in the field. Recent U.S. patents (assigned to Fabrikum Bayer Aktiengesellschaft): 2,712,026 (O,O-di-lower alkyl thionophosphoric azides; 2,701,259 (O,O dimethyl-O-4-nitro-3-chlorophenyl).

- Malathion synthesizer and developer, American Cyanamid Co. is continuing the search for an even better product, reveals it has field tests under way on some newcomers. A recent Cyanamid patent is 2,692,893 on a method of preparing dialkyl chlorothiophosphates.

- Pittsburgh Coke & Chemical, active in systemic phosphate development (*CW*, Dec. 25, '54, p. 44), was awarded patent 2,692,891 on thiophosphate ester production.

- Du Pont reports it has no organic phosphorous compounds in the field-testing stage at the present time, but is continuing its lab screening program for compounds that combine high insecticidal efficiency with low toxicity to warm-blooded animals.

Du Pont's commercial stake in phosphorous bug killers are its EPN 300 insecticide (25% ethyl p-nitrophenyl thionobenzenephosphonate, 75% inert), which wholesales at upward of \$1/lb., and an aphid and mite spray containing malathion. Working with EPN, U.S.

* Effective this season, the law (known as the Miller bill before its passage last year) shifts the burden of proof of how much insecticide residue (on fruits, vegetables, etc.) is allowable—from the Food & Drug Administration to the insecticide manufacturer. These fixed tolerances are a measure of toxicant safety (e.g., zero tolerance has been set for highly dangerous tetraethyl pyrophosphate).

† A number of compounds tested have produced 100% insect mortality at concentrations as low as 0.002%.

Dept. of Agriculture researchers H. C. Cox and T. Brindley—at the Ankeny, Iowa, USDA laboratory—have evaluated granular formulations to minimize residue hazards, found some improvement. Cyanamid's malathion and parathion have had similar trials.

So far, USDA's lone contribution to the new era in phosphorous insecticides is its DDVP (dimethyl dichlorovinyl phosphate), which is being pilot-produced by Montrose Chemical Co. (Newark, N.J.). Still being evaluated, DDVP (*CW*, Feb. 19, p. 91) is reportedly approximately about a tenth as toxic as parathion or tetraethyl pyrophosphate.

USDA's reluctance to enter into the race for new compounds is of its own choosing, since such work is traditionally the domain of private industry. And insecticide makers are rising to the task because not only prestige but

also profits will attend a better phosphate.

One authoritative guess is that each insecticide dollar he spends saves the farmer anywhere from \$5 to \$20. Armed with statistics like these, the insecticide industry is expanding its selling effort—and looking for better products to garner sales. However, there are still lots of hurdles for the phosphates.

For one thing, cost of the phosphorous compounds is still somewhat higher than that of other insecticides. Malathion, for example, costs about 88-98¢/lb. vs. 27-30¢/lb. for DDT. What's more, even the phosphorous compounds are beginning to compete with each other. Geigy Chemical Corp.'s Diazinon [O,O-diethyl-O-(2-isopropyl-4-methyl-pyrimidyl (6)) thiophosphate] and malathion are typically competitive fly killers.

Despite such barriers, there's every evidence that organic phosphate insecticide research hasn't reached peak acceleration. Pesticide makers agree that the bonus awaiting a superior compound is great enough to spur the hunt.

Atom Items: Add General Electric to the roster of firms with new radiation laboratories. In Schenectady, N.Y., last fortnight, the company opened a research building that will be devoted to applied nuclear studies (i.e., tracer investigations, activation analysis, testing of irradiated materials). A made-over factory, the 2½-story structure houses a 15-million-volt betatron, high-voltage heavy-particle accelerator, 1,000-curie cobalt source and apparatus for handling of radioactive materials.

• In Washington, D.C., meanwhile,



A Big Jump—Pleistocene to Plastics

ONE CAREER at a time is enough for most men. But Lawrence Nielsen, who has the title of scientist with the research department of Monsanto's plastics division, does fine with two.

When not at work in the company's Springfield, Mass., laboratories, Nielsen is likely to be clambering up a mountainside in the frozen North. He recently led an eight-member Alaskan expedition (sponsored jointly by the American Geographical Society and the Arctic Institute of North America) that was the first to explore

the Columbia Glacier, reputed to be the largest unexplored mountain area in Alaska. Nielsen considers himself to be a professional glaciologist, has published "The Castner Glacier Region, Alaska," "Regimen and Flow of Ice in Equilibrium Glaciers," and other papers.

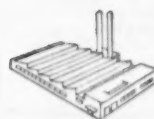
Among his contributions to the physical sciences are an elasto-viscometer that measures viscosity and elasticity of plastics, and a dynamic testing apparatus that determines sheer modulus and mechanical damping of plastics in temperatures from -50-300 C.

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RESEARCH

the Atomic Energy Commission set a schedule of charges for sale and lease of research-reactor materials. Under the new cost arrangement, enriched uranium (20% U-235) will be leased for \$25/gram of contained U-235. Uranium metal and heavy water will sell for \$40/kilogram and \$28/lb., respectively.

Super Sleuth: A custom-built mass spectrometer, said to incorporate "several radically new design features," has lately been installed in Shell Oil's Houston, Tex., research laboratories. Consolidated Engineering (Pasadena, Calif.), which designed and manufactured the instrument, says it will identify two to three times as many compounds in petroleum as is possible with the conventional mass spectrometer.

Catalysis by Exchange: National Aluminate Corp. (Chicago) is offering

comprehensive information on catalysis with ion-exchange resins. Covered: theory, conditioning procedures, operating techniques, and other areas explored by the company's researchers.

Relaxer: Latest bid for a piece of the psychiatric-drug market is Wyeth Laboratories' (Philadelphia) Equanil, a propanediol derivative that reportedly gives quick relief from anxiety and nervous tension. It's claimed to be non-habit-forming, functions as a nervous-system depressant.

Easy End-Point: A brand-new automatic titrator, introduced by E. H. Sargent & Co. (Chicago), is not likely to go unnoticed. Employing Malmstadt's second-derivative method of potentiometric titration [*Anal. Chem.*, 26, 1348 (1954)], the instrument determines end-points and actuates buret valves, both automatically. Big advantage: no predetermination of the shut-



Distaff Duty

OFFICIAL HISTORIAN at the recent Geneva "Atoms for Peace" conference was Laura Fermi, widow of Enrico Fermi who directed the world's first controlled atomic chain reaction at the Uni-

versity of Chicago in 1942. Shown with her: Union Carbide engineer T. E. Cole, said to be the first to propose that a nuclear reactor be included in the U.S. exhibits at the conference.

RESEARCH

off (end) point is required. Result: full-flow delivery to shutoff point, with substantial time savings, is possible. Sargent thinks the new titrator exceeds any present titrating equipment in accuracy, precision, speed and simplicity of manipulation. Cost: \$390.

Caloric Boost: A new Bureau of Mines publication* tells how to increase the heating value of synthesis gas. Researchers of the bureau's Bruceton, Pa., laboratories found that a

* R.I. 5137, "Synthesis of Methane," by M. Greyson, J. J. Demeter, M. D. Schlesinger, G. E. Johnson, J. Tomaskin and J. W. Myers. Source: Bureau of Mines, Publication Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

partly leached nickel alloy catalyst in a fluidized bed converts synthesis gas into a product possessing most of the characteristics of natural gas.

Features: catalyst activity is restorable by additional leaching; product gas, mainly methane, is claimed to be suitable for use in appliances designed for natural gas.

Ready Reference: A 112-page, paper-bound volume of "Selected Scientific Tables and Data" is newly available from United States Testing Co. (Hoboken, N.J.). Free for the asking, the publication includes chemical, physical and engineering data, as well as reference matter in the fields

of plastics, bacteriology, textiles, leather and psychometry.

Back to Nature: Now in pilot-plant production at Firestone Tire and Rubber Co. (Akron, O.), a newly revealed synthetic rubber is said to duplicate the natural variety in composition and properties. Like Goodrich-Gulf's nature-emulating elastomer (*CW*, July 9, p. 50), the newcomer is pointing for use in truck tires. Firestone says the rubber has been road-tested for two years, shows tread wear about equal to natural rubber. Patent rights, research data and samples are being offered to the Defense Dept. and the rubber industry.

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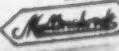
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1	H																	Ne
2	Li	Be																Ar
3	Na	Mg																Kr
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Xe
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	
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